Manufacturing Product Phase Down Guidelines

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ABSTRACT: This document addresses manufacturing phase down management of hardware and software products worldwide. It links to all corporate functions, and its strategies are intended to be integrated with other corporate strategies, such as the One Plan, financial responsibility, and inventory control. This document is intended to tie into other documents of similar format, designed to facilitate one common process for managing products in the manufacturing cycle, from introduction to retirement.

APPLICABILITY: These guidelines apply to Digital personnel in Manufacturing, including PBU, Area, and Customer Services management groups worldwide. They apply to the manufacturing phase down management of hardware and software products and the materials architecture, particularly new products. These guidelines deal with the activities involved in terminating the manufacture of a product but should also be considered throughout the manufacturing life cycle to facilitate phase down.

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CONTENTS

Preface vii

Chapter 1 INTRODUCTION 1

1.1 GOAL 1

1.2 OBJECTIVES 1

1.3 PURPOSE 1

1.4 DEPENDENCIES 2

1.5 RESPONSIBILITIES 2

Chapter 2 PROCESS 5

2.1 RECOGNIZING PPD PRODUCT 8
2.1.1 PPD Recognition Criteria 8
2.1.2 Data Analysis to Support Recognition Criteria 9

2.2 MANAGEMENT REVIEW AND VALIDATION 9

2.3 THE DEMAND/SUPPLY CONNECTION 10
2.3.1 Demand/Supply Process 10
2.3.1.1 Critical Parts Process - Weekly 11
2.3.1.2 Long-Range 3YP Process - Annually 11
2.3.2 PPD Specific 11
2.3.3 PPD Generic 12
2.3.3.1 Critical Parts 12
2.3.3.2 Product Shipping Guide 12
2.3.3.3 Collaborative Forums 12
2.3.3.4 PCU Assumptions Book 12
2.3.4 Tactical Volume Plan Visibility 12
2.3.4.1 Top 80 Products 12
2.3.4.2 Three-Year Plan (3YP) 13
2.3.4.3 Not Top 80 Products 13
2.3.4.4 Customer Services Demand 13

2.4 PARTS DEPENDENCY RECOGNITION AND NOTIFICATION 13

2.5 MATERIAL PLANNING AND ACQUISITION GUIDELINES 14
2.5.1 Phase Down Stage A 15
2.5.2 Phase Down Stage B 15
2.5.3 Phase Down Stage C 16
2.5.4 Matched Sets and Can-Build Analysis 17
2.5.5 Optimum Build Quantity 18
2.5.6 Decision-Making and Management Process 19

2.6 MANUFACTURING-TO-CUSTOMER SERVICES TRANSITION 20
2.6.1 Digital Manufacturing - Customer Services Logistics Working Agreement 20

2.6.2 Product Transfer/PPD 21

2.7 SOFTWARE VERSION LIFE CYCLE MANAGEMENT 22
2.7.1 Recognizing PPD Product 22
2.7.2 Material Planning and Acquisition Guidelines 23

2.8 ARCHIVING 24
2.8.1 Archiving Decision 24
2.8.2 Limits of Archiving Decision 24
2.8.3 Supplier Archiving 24
2.8.4 Archiving Techniques 24
2.8.5 Archiving Period 24
2.8.6 The Archiving List 25

Chapter 3 PPD AND THE PHASE REVIEW PROCESS 27

3.1 MAJOR REVIEW MATRIX - PPD 27

3.2 INPUT/OUTPUT MATRIX WITH DEPENDENCIES 27

3.3 ABBREVIATIONS AND ACRONYMS 28

Chapter 4 WORLDWIDE MANUFACTURING CROSS-FUNCTIONAL INTEGRATION 43

4.1 MANUFACTURING ENGINEERING 43
4.1.1 Document Control 43
4.1.2 Process Engineering 44
4.1.3 Facilities 45

4.2 QUALITY 45

4.3 FINANCE 45

4.4 PERSONNEL 46

4.5 MIS 46

4.6 PRODUCT MANUFACTURING BUSINESS UNIT/GROUP MANUFACTURING . . . 46

4.7 MANUFACTURING SYSTEMS PROGRAM MANAGER OR MANUFACTURING PROJECT LEADER 46

4.8 PLANT 47

4.9 PLANNING 47

Appendix A DEMAND/SUPPLY PROCESS FOR PPD 51

Appendix B MANUFACTURING LIFE CYCLE CURVE 55

Appendix C REFERENCED DOCUMENTS 57

C.1 EL-Class Digital Documents 57

C.2 Other Digital Documents 57
C.3 Ordering Information 57

Appendix D RELATED DOCUMENTS 59
D.1 EL-Class Digital Documents 59
D.2 Other Digital Documents 59
D.3 Ordering Information 59

GLOSSARY 61

FIGURES

1 Manufacturing PPD Macro-Level Process Flow 7
2 Demand/Supply One Plan Process Quarterly Calendar 11
3 Parts Dependency Recognition Flowchart 14
4 Financial Analysis 19
5 Major Material Phase Review Exit Criteria 32
6 PPD Input/Output Model Matrix - Demand/Supply 35
7 PPD Input/Output Model Matrix - Order Administration 36
8 PPD Input/Output Model Matrix - Material Acquisition 37
9 PPD Input/Output Model Matrix - Inventory Planning 38
10 PPD Input/Output Model Matrix - Production Control 39
11 PPD Input/Output Model Matrix - Distribution 40
12 PPD Input/Output Model Matrix - Customer Services 41
13 Manufacturing Cross-Functional Impact Matrix - Manufacturing Engineering 48
14 Manufacturing Cross-Functional Impact Matrix - Quality 49
15 Manufacturing Cross-Functional Impact Matrix - Finance 49
16 Manufacturing Cross-Functional Impact Matrix - Personnel 50
17 Manufacturing Cross-Functional Impact Matrix - MIS 50
18 Manufacturing Cross-Functional Impact Matrix - Planning 50
19 One Plan Process 51
20 Product Visibility 52
21 *One Plan* Planning Process 53
22 Manufacturing Life Cycle Curve 55

Preface

Foreword

The Corporate Product Phase Down (PPD) Steering Committee deemed that there was a lack of focused, uniform management of the phase down and end-of-life of Digital products. This observation was made while the Committee was determining the elements of a documented Materials Architecture within Manufacturing. The accumulation of surplus and obsolete inventory created over the years supported this notion and substantiated the need for product phase down process guidelines.

As the Committee developed the Materials Management guidelines, the fact became more apparent that a successful product phase down program required cross-functional and cross-organizational involvement, and the Committee expanded its focus to include those functions. This document, *Manufacturing Product Phase Down Guidelines*, is the product of those efforts.

This document serves as cross-functional guidelines for Materials Architecture, and when used with similar guidelines developed by Product Management and Customer Services, this document also addresses the need to manage Digital's products during the later stages of their life cycles.

Ed Goucher
Corporate Manufacturing Product Phase Down Manager
CSS Group Materials Manager

Executive Summary

This document provides Manufacturing with guidelines for managing products at the end of their life cycles. It shows how Manufacturing ties in with the PCUs, the Areas, Customer Services, and other functions that deal with products at end-of-life. One of the important philosophies in this document is that the PCU Product Manager is the responsible individual and the PCU is the responsible function for Product Life Cycle Management, which must include products that are phasing down or are at the end of their sales and manufacturing lives. This document also demonstrates how the ownership of the product, as it transfers into service life only, is negotiated between the various functions, especially Manufacturing, Customer Services, and the PCU Product Manager.

For an overview of this document, do the following.

Read Chapter 2 and study Figure 1, Manufacturing PPD Macro-Level Process Flowchart. Subheads 2.6 and 2.7 are especially noteworthy for explaining the Customer Services and software part of the process.

Scan Chapter 3 to understand how the six major Materials functions and Customer Services are covered in various phases of the Phase Review Process in terms of inputs required to the function and outputs expected by the function.

Review Chapter 4 to get an impression of what some of the other functions within Manufacturing are expected to do in terms of managing products through phase down. Also, at the end of Chapter 4 is an impact matrix for each of those other Manufacturing functions.

It is important that all people involved in the functions that work with and support the PPD of products read this document in order for them to better understand their roles.

CHAPTER 1

INTRODUCTION

1.1 GOAL

The goal of the Corporate PPD Steering Committee is to ensure that products are phased out to achieve the key corporate goals of Customer Satisfaction and Return on Assets (ROA).

1.2 OBJECTIVES

Three objectives associated with that goal are as follows.

- Define Manufacturing PPD planning and execution.
- Integrate Manufacturing PPD with other corporate objectives.
- Discontinue the nonservice sales and manufacture of products no longer profitable and/or which do not support Digital's strategic objectives.

1.3 PURPOSE

This document provides guidance to manufacturing functions worldwide for managing the phase down process for products determined to be approaching their manufacturing end-of-life. The overriding objective is to have enough product to satisfy our customers, while yielding zero obsolescence to Digital. Under the guidelines set forth in this document, Manufacturing, in conjunction with PCUs, Areas, and Customer Services, shall actively identify products that are potential candidates for phase down.

This document also defines a process for product phase down planning and implementation in Manufacturing, and ensures the achievement of key product goals for Customer Satisfaction and ROA. The impact, in terms of change in human resources, skills needs, and individual growth, shall be actively managed through human resources planning, education and training programs, and promotion of professionalism in manufacturing functions.

This document is not intended to be a detailed controlling manual. Such documentation, supporting the guidelines given here, shall be provided by responsible management within each group and facility, determined by the requirements of the products and personnel involved. It links to all corporate functions, and its strategies are intended to be integrated with other corporate strategies, such as the *One Plan*, financial responsibility, and inventory control.

The document is also intended to tie into other manuals that comprise the materials architecture, particularly new products. The same format has been used in order to develop one common process for managing products in the manufacturing cycle, from introduction to PPD. Although these guidelines deal directly with activities needed to terminate the

manufacture of a product, they are an important and appropriate consideration throughout the manufacturing life cycle to facilitate phase down. The New Product Module of the Materials Architecture plus this document provide us with Manufacturing Product Life Cycle Management.

Digital's corporate policy is to manage products through all phases of their life cycles, including manufacturing phase down and manufacturing end-of-life. Digital is committed to communicate product availability, service, and support plans in order to give our customers a reasonable amount of time to plan for their needs. *Reasonable* is to be determined by a balanced consideration of ROA and Customer Satisfaction.

It is also corporate policy to maintain the option to restart a product when market and technological conditions make the option mutually beneficial to Digital and prospective customers.

This document provides a map for Manufacturing management to support the intent of these policies, both phase down and/or restart.

1.4 DEPENDENCIES

The success of the Manufacturing PPD process is dependent on many factors.

- The product must have constant exposure by the Demand/Supply process through Manufacturing PPD.
- The Manufacturing PPD process must function independently of the formal phase review process. If the phase review process is disciplined and working by design, it shall trigger the PPD process. If not, the PPD process is self-triggering.
- Management must apply the principles of the Manufacturing PPD process to all products.
- Manufacturing groups must adhere to the identification criteria and validation processes.
- There must be ongoing, cross-functional communication and responsiveness to the identification and management of resources impacted by a product in phase down.
- There must be development of timely and thorough product business plans per *DEC STD 130-0 Product Business Plan Requirements: Content Requirements and Format Guidelines*.
- Necessary detailed procedures, supporting this document, must be created by effected groups, facilities, and organizations.
- Where the nature of a product is such that it is subject to continual revision, as in the software business, it is necessary to apply at the outset the concept of *Version Life Cycle Management* to avoid the potential high cost of obsolescence that can be caused by the continual changes in software functionality.

1.5 RESPONSIBILITIES

The overall responsibility for phase down of a given product lies with the PCU Product Manager. The End Product Producer Manufacturing Management Team is responsible for achieving the objectives of this document.

This Manufacturing Team is responsible for, but not limited to, the following.

- Periodically monitoring product data to identify PPD candidates.
- Driving the PCU Product Manager to administer the cross-functional verification process, if warranted.
- Putting plans and procedures in place, supportive of this guideline, with enough detail and definition to ensure a successful PPD process.
- Driving the Greater PCU and specifically the Product Manager to make the optimum final build decision with the Greater PCU based on the objectives of Customer Satisfaction and ROA.
- Managing the deployment of manufacturing resources displaced by PPD.
- Managing the transfer of relevant activities to Customer Services.
- Ensuring that the *Version Life Cycle Management* concept (Chapter 2, subhead 2.7) is applied in the introduction and PPD of software products.

CHAPTER 2

PROCESS

This chapter defines the Manufacturing PPD process. The process is shown in a macro-level flowchart in Figure 1. This chapter is broken down into many sections as follows.

Recognizing PPD	Describes criteria and an analysis that help support the recognition of a PPD in Manufacturing.
Management Review and Validation	Management review of a product that has been recognized as a possible PPD candidate and validation by the Greater PCU.
Demand/Supply Connection	Covers various aspects of the Demand/Supply process throughout the company and explains how the responsible individual for a product in phase down can deal with the elements of the Demand/Supply process.
Parts Dependency Recognition and Notification	A process for identifying parts that are dependent on the validated PPD product. It shows how the responsible manufacturing planning function can analyze the product and determine which parts will be affected by the decrease in demand in this phase down product. It also requires notification to Commodity Management for externally procured material and notification to the appropriate pipeline suppliers for internally manufactured dependent parts to the product phase down candidate.
Materials Planning and Acquisition Guidelines	Covers a product throughout the down side of the volume curve in the manufacturing life cycle. In this subhead, the descending part of the curve is broken down into three segments - Phase Down Stages A, B, and C.
Matched Sets and Can-Build Analysis	Management of matched sets throughout the pipeline and can-build analysis that will help feed the business entity (the Greater PCU) in arriving at the Optimum Build Quantity.
Optimum Build Quantity	Shows how the PCU Product Manager with support functions might arrive at an optimum build quantity.
Decision-Making and Management Process	A management overview of the decision-making and management process in Manufacturing PPD.
Manufacturing-to-Customer Services Transition	How Customer Services Logistics expects Manufacturing to support service needs at PPD.

Software Version Life Cycle Management	The management of software through PPD.
Archiving	Is archiving necessary? Who decides? What is required of Manufacturing in support of archiving?

Some support figures that will help you in reading and understanding this chapter are:

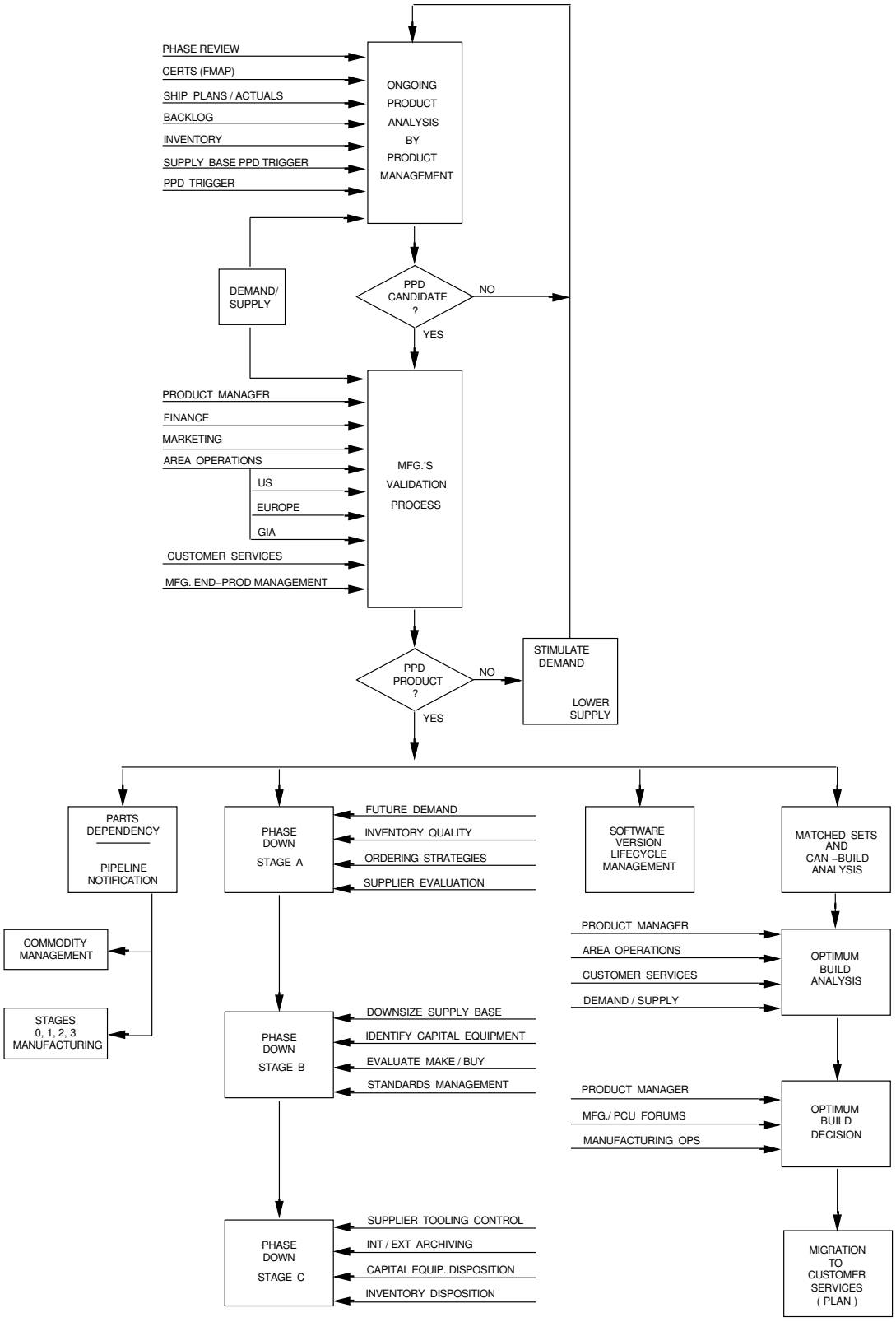
Figure 1: Manufacturing Product Phase Down Macro-Level Process Flow

Figure 2: Demand/Supply One Plan Process Quarterly Calendar

Figure 3: Parts Dependency Recognition Flowchart

Figure 4: Financial Analysis (would be done by the Greater PCU or the business entity responsible for managing the product throughout its life cycle)

Figure 1: Manufacturing PPD Macro-Level Process Flow



2.1 RECOGNIZING PPD PRODUCT

Predicting a product's phase down is not an easy task. Many variables, such as market demand, evolving technology, competition, and new product introduction, play a major part in determining a product's usefulness to the Corporation.

A well-managed Phase Review Process can recognize the symptoms and make the PPD determination with considerable accuracy. However, not every phase review is successful and not every product enjoys the protection of a formal, or even informal, phase review.

Therefore, Manufacturing Management must play a major ongoing role in monitoring data, forcing analysis and review by peer management, and making the decision to enter a product into the PPD process. The following recognition and validation criteria should be used by Manufacturing Management.

2.1.1 PPD Recognition Criteria

The data discussed here is normally available to Manufacturing Management. Much of it is available through the Demand/Supply Group which also conducts forums, receives and generates product-pertinent reports, and is a source of real time product demand information. Close coordination and exchange of information with Demand/Supply will enhance the decision process when determining that a product is a PPD candidate. Refer to Appendix A.

The following is a list of databases that together must be monitored monthly in conjunction with the production planning process described in the Production Planning and Execution Module of the Materials Architecture to detect PPD candidates.

- **CERTS:** CERTS (certified orders) using FMAP at the appropriate level (chart, variant). Use moving averages to smooth PPD and 13-week anomalies.

  Reduction in CERTS (moving average) by X % of weekly CERTS per month. Following is an example of an average weekly CERTS formula which can be used as a guideline. Analyze and identify against Parent Demand changes (System/Option or Interdependent/Option).

$$\text{Weekly CERTS Average} = \frac{\text{Total Fiscal Monthly CERTS}}{\text{Number of Fiscal Weeks in Month}}$$

- **Actual ships:** Again, use moving averages.

  Reduction in shipments (moving average) by X % of weekly shipments per month. Following is an example of an average weekly shipment formula that can be used as a guideline.

$$\text{Weekly Ships Average} = \frac{\text{Total Fiscal Monthly Ships}}{\text{Number of Fiscal Weeks in Month}}$$

- **Backlog:**

  Analyze backlog to determine if shipping is being done from backlog.

- **Ship Plans:**

  Use the FMAP Ship Plan and the 3YP Plan to get required planning horizon.

  Forecasted reductions in Ship Plan:

  — Analyze Ship Plan to determine if reductions are or shall be reflected. (CERTS down, ship plan stable.)

  — Disconnect between PCUs and Field?

  — Ongoing marketing incentive programs? (CERTS down, ship plan down.)

  — Has something new been announced? (internal or external)

- **Inventory:** (dollars, units, weeks, note changes up or down)

Criteria Met:

Determine from a combination of the above data if criteria for Manufacturing PPD has been met. If an unscheduled or unanticipated reduction or imbalance occurs in any database or combination of databases, the product may be a PPD candidate.

NOTE

Monitoring these databases may not be sufficiently timely to determine PPD for products with a planned short life cycle (defined as four quarters or less) or a limited build schedule. For such products, a PPD *trigger point* must be established and documented by the PCU Product Management before Manufacturing Management begins any material acquisition activities. These *trigger points* shall be stated in terms of a specific date or a specific build quantity.

A Supply Base Driven Trigger detects product phase down candidates. When a single source supplier informs Digital that a unique part for a product shall no longer be supplied, PPD activities shall commence. At a minimum, we shall make a lifetime buy to cover Manufacturing and Customer Services phase down. The Product Manager of the effected product(s) shall start a PPD Plan. Refer to *EL-EN540-00 Product Phase Down Handbook for Product Managers*.

2.1.2 Data Analysis to Support Recognition Criteria

It is impossible in a guideline like this to state what percent of reduction in ships and/or CERTS would be a true indicator to the End Product Producer that the product is actually entering the downward side of its manufacturing life cycle. Each End Product Producer shall determine, from their unique product knowledge of the typical fluctuations in CERTS and/or ships on each product, what the threshold of reduction would be before the product becomes a PPD candidate. Refer to Appendix B.

2.2 MANAGEMENT REVIEW AND VALIDATION

If the data indicates that the product is a possible product phase down candidate, Manufacturing Management shall cause the PCU Product Manager to convene a cross-functional forum to determine an appropriate course of action. Normally, the forum shall include representatives of the following groups.

- Marketing, Finance and Product Management
- Customer Services Product Management

- Area Operations
  - — U.S.
  - — GIA
  - — Europe
- European Base Product Management
- Demand/Supply Business Analysis Management
- End Product Manufacturing Management
- Pipeline Manufacturing Representation

If the product is determined **not** to be at the PPD stage, then appropriate remedial actions, such as stimulating product demand or lowering product supply, shall be undertaken.

If the product is determined to be at the PPD stage, then phase down activities shall be undertaken appropriate to the guidelines provided by this document.

2.3 THE DEMAND/SUPPLY CONNECTION

The following section describes the integration of the Demand/Supply process for PPD products. Refer to Appendix A.

2.3.1 Demand/Supply Process

The Demand/Supply process is several interlinking processes that enable and encourage synchronization between the various organizations involved in building and selling a product. Refer to Figure 2.

The Corporate Demand/Supply Group facilitates this process — highlighting inconsistencies, and providing forums and visibility for discussion of data such as Ship Plans, Build Plans, Critical Parts, load and availability, and forecasting data.

Products that receive the greatest visibility through this process are the *Top 80* products. These receive maximum focus using the Tactical Volume Plan. Determination of Top 80 status is made based on ship volume and revenue impact. This determination is made by the Demand/Supply Business Analysis Manager with input from various other disciplines such as Manufacturing, Product Creation Units, Marketing, Area Forecasting, and Customer Services.

Remaining products are given visibility through the Ship Planning Process, and by internal demand signals generated based on the ship and build plan process. The balancing of these ship and build plans is known as the *One Plan* process. The prime focus for managing products, inventories and raising material and inventory issues in this process resides with the manufacturing entity. All of these products — new, steady state, or phase down — are covered under the umbrella of this process. For a better understanding, refer to Appendix A.

The following is the Demand/Supply One Plan Process Quarterly Calendar with adjustments made to better focus on PPD.

Figure 2: Demand/Supply One Plan Process Quarterly Calendar

Strategic 8QVP Process – Quarterly			
ACTIVITY	Fiscal Month	Fiscal Week	Day
1. PCU Assumptions due	1	3	5
2. PCU Assumptions Book distributed	2	1	3
3. Systems Product Volumes due	3	4	3
4. Component Product Volumes due *	1	1	1
5. 8QVP Volumes Book distributed *	1	2	1
Tactical 0–12/20 Process – Twice per Quarter			
ACTIVITY	Fiscal Month	Fiscal Week	Day
1. Area Business Plans due	2	1	3
	3	3	3
2. Area Ship Plans and ROS (Risk & Opportunity Statements) due	2	2	3
	3	4	3
3. Area Ship Plans and ROS released on FMAP	2	2	4
	3	4	4
4. Manufacturing supply response due *	2	4	3
	1	2	3
5. Tactical Volume Plan published *	3	1	3
	1	3	3

* Activities during fiscal weeks 1, 2, and 3 refer to the final steps of the 8QVP and TVP from the PREVIOUS QUARTER.

2.3.1.1 Critical Parts Process - Weekly

Constrained products are allocated to the areas on Wednesdays.

2.3.1.2 Long-Range 3YP Process - Annually

This long-range strategic planning process occurs in the second fiscal quarter.

2.3.2 PPD Specific

There are several areas that might be considered special needs of product in phase down, which can be addressed as follows.

As a result of ongoing analysis, each Product Creation Unit needs to maintain a PPD Focus List/PPD Candidate List. This shall include, at a minimum, products that need phase down attention during the year, including those products that have or need PCU business planning work. This list shall be given to the Business Analysis Manager and widely circulated to effected parties, to ensure that all areas involved are aware of the status of the products.

At least once monthly, manufacturing plants shall review current volumes and trends that would determine the beginning of product phase down. Each Product Creation Unit shall generate, update, and circulate this data.

2.3.3 PPD Generic

The following are some methods for providing information about PPD and/or resources for learning about PPD.

2.3.3.1 Critical Parts

All product showing significant inconsistencies between Ship Planning volumes, load, and/or availability must be brought to the Corporate Critical Parts Process (whether PPD or not). A product shall not be excluded because it is PPD, or treated differently from an ongoing product, if there is a possibility that it will cause Customer Satisfaction issues.

2.3.3.2 Product Shipping Guide

Product projected as PPD shall, as it is being replaced by a new product, be highlighted through the Product Shipping Guide. Manufacturing can cause updates to this process through the Critical Parts Process.

2.3.3.3 Collaborative Forums

As part of the effort to bring focus to a phase down product, Demand/Supply and the responsible manufacturing entity will request product management to stress phase down product information in the various collaborative forums, focusing on the multidimensional impacts of product migration. The Business Analysis Manager in Demand/Supply shall monitor all products to insure there is a comprehensive PPD plan.

2.3.3.4 PCU Assumptions Book

On a quarterly basis the most current product information received from the PCUs is presented to Area Management. The current status and product life cycle stage can be determined from this information and phase-in/phase-out product strategy is made visible.

2.3.4 Tactical Volume Plan Visibility

The following section addresses methods for sharing information about the One Plan Process.

2.3.4.1 Top 80 Products

Monthly updates of ship plans and build plans are published in the Tactical Volume Plan, along with descriptive paragraphs outlining current issues. Major issues, planning inconsistencies, inventory problems, and potential Customer Satisfaction issues are addressed by the Business Analysis Manager.

Once volumes start to decline and reach a level that would not warrant inclusion in the Top 80, the product shall be removed from the Tactical Volume Plan. If the Demand/Supply Business Analysis Manager decides to take this step, she or he shall ensure that a message is incorporated into the Tactical Volume Plan that a Phase Down Plan must be started.

Although the product build and ship plan numbers shall no longer be given visibility in the Tactical Volume Plan, major planning inconsistencies shall be brought to the attention of the Business Analysis Manager for inclusion in the *Issues* subhead of the Tactical Volume Plan. It is up to the product producers to raise visibility of these issues, both by bringing them to the attention of the Business Analysis Manager, and by working the issues with the parties involved. This focus shall continue as long as there is inventory even if the product is no longer being built.

2.3.4.2 Three-Year Plan (3YP)

Top 80 products **may** be forecasted through its life cycle in the 3YP, ensuring that long term impact and phase-in/phase-out implications are covered. Once again, when a product needs this level of visibility, or presents special issues, the responsible Manufacturing Organization can request that the Business Analysis Manager include it.

2.3.4.3 Not Top 80 Products

Products not in the Top 80 can be given visibility by being brought to the attention of the Demand/Supply Business Analysis Manager by the product producer, as needed.

2.3.4.4 Customer Services Demand

Customer Services demand is incorporated into the Tactical Volume Plan with special attention given to the initial start-up of the products. After start-up, product demand from Customer Services continues to be monitored at the monthly Product Captains' forums. The normal Material Order System (MOS) shall be used to request spares. The Customer Services Product Phase Down strategy shall be followed throughout product phase down. Refer to *EL-FS540-00 Field Service Product Phase Down Procedures* for more information.

2.4 PARTS DEPENDENCY RECOGNITION AND NOTIFICATION

Parts Dependency Recognition is strictly an identification process to be followed by the End Product Producer (Figure 3). No action is required other than to identify and notify organizations whose actions and/or support would be required to properly manage the components of a PPD product.

Following are recommended process steps to identify appropriate parts or components and responsible organizations.

Step 1: Identify the end product part number, as defined in a Bill of Materials (BOM).

Step 2: Explode the end item part number through the BOM to identify all the component parts.

Step 3: Compare the components to the Where Used listing.

Step 4: Identify each component as material that is either *common* or *unique* to that manufacturing facility.

- If common, identify all other products on which the material is used. Notify internal suppliers of parts identified as dependent to product being phased down. Notify Commodity Management of externally supplied parts.
- If unique, identify as such and proceed to Step 5.

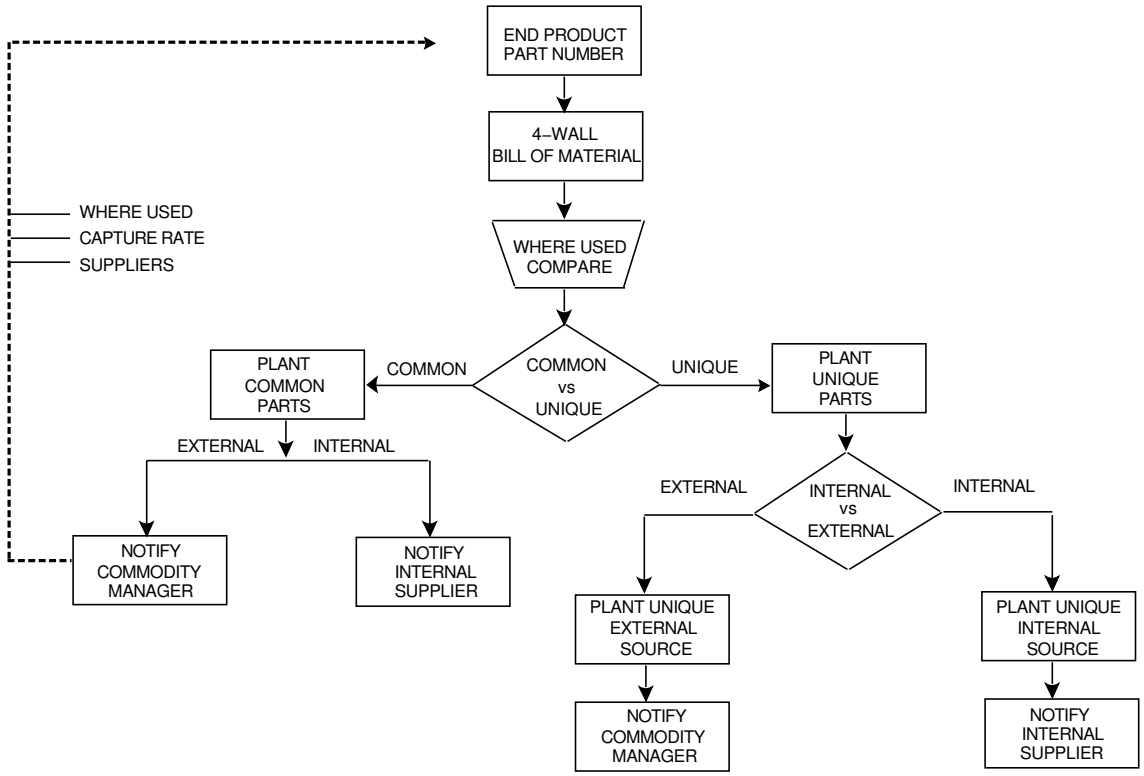
Step 5: Determine if unique materials are sourced *internal* or *external* to Digital.

- If internal, notify internal suppliers. Internal suppliers shall continue this process internal to their facility, beginning at Step 1.
- If external, identify as such and proceed to Step 6.

Step 6: For plant unique materials acquired externally, determine if there are usage requirements elsewhere in the Corporation.

- If the material is identified as unique to the manufacturing site, identify as such and notify Commodity Management that parts are dependent to a product being phased down.

Figure 3: Parts Dependency Recognition Flowchart



2.5 MATERIAL PLANNING AND ACQUISITION GUIDELINES

This section sets forth guidelines for material planning and acquisition for products entering the down side of their product maturity curve. All End Product Producers shall follow these guidelines throughout the supply chain. For the purpose of establishing a framework for the timing of specific activities, the product phase down curve has been broken down into three stages (refer to Appendix B).

Although PPD planning has been segmented for activity planning purposes, the timing of events shall be developed for each specific business (such as Terminals, Storage Systems) based on the historical PPD curve over time. In the event this information does not exist for your business, the Product Phase Down Steering Committee recommends the following guidelines for segmentation of the three stages of phase down planning.

2.5.1 Phase Down Stage A

Stage A begins at a point when customer demand has subsided to a specific level below previous steady-state sales rates. At this point the Committee considers the product to have formally entered into its product phase down planning cycle. The following issues shall be taken into consideration during Stage A.

- *Anticipated Future Demand*

  Given that product sales demand has peeked at some time prior to entering Stage A, it shall be assumed that there is more down side sales risk at this time than up side. Therefore, close scrutiny of ship forecast versus actuals, as well as the measurement of CERTS activity, shall enable the End Product Producer to plot and forecast anticipated future demand.

- *Quality of Inventory*

  Based on the anticipated future demand, an appraisal of the quality of the inventory shall be conducted. It is imperative that the entire pipeline be appraised at this point, with the intention of balancing production, to support matched sets requirements. Also, a complete review of outstanding purchase orders shall be performed for potential cancellation or rescheduling activity.

- *Part Ordering Strategies*

  A complete review of ordering practices or guidelines is appropriate at this stage. Where components and/or subassemblies were once ordered to fill up the week's bucket, or to generate savings through economical buys, these practices may no longer be appropriate.

- *Supply Base Evaluation*

  The purpose of this evaluation is to determine the potential impact to the current supply base for products that will ultimately be affected by our PPD plans. We shall begin to position ourselves to better manage the flow of material into the company for a PPD product and, therefore, shall look to reduce the number of suppliers used in providing parts. Sensitivities to corporate commitments to specific suppliers must be considered.

2.5.2 Phase Down Stage B

Stage B begins when revenue shipments have fallen to approximately 25% to 30% of previous steady-state sales rates. The following issues shall be taken into consideration during Stage B.

- *Contracting of the Supply Base*

  A comprehensive review of the total supply base, both internal and external, is appropriate during this phase. The objective shall be to reduce the number of duplicate sources for piece parts and subassemblies. Also, opportunities for reducing the internal manufacturing partners through vertical manufacturing alignment shall be fully exploited. The intent here is to be in a better position to manage inventory exposure, plan matched sets, and demand signal dissemination.

- *Identification of Potential Excess Capital Equipment*

  A complete list of all capital equipment used in the manufacture of the PPD product shall be prepared. Special emphasis shall be placed on dedicated unique equipment, such as testers or jigs, as well as equipment that will be significantly under-utilized at the time of discontinued build.

- *Re-evaluation of Make/Buy Alternative*

  In so much as cost management continues to be a primary objective for manufacturing, PPD products potentially require greater efforts to maintain cost control programs. One alternative to achieving cost controls and full asset utilization is to re-evaluate the make/buy alternative on major subassemblies. This shall be evaluated with an eye on future support needs beyond the last revenue shipment. Customer Services must be in a position to outline their requirements or strategies during this period, to aid in the make/buy evaluation.

- *Standards Management Process*

  The intention of management control or influence for the Standards Setting Process is to ensure that the inventory asset is properly valued on the company's books. Manufacturing must make sure that, for a part or subassembly uniquely associated with a PPD product for which quantities on hand are equal to or greater than future demand, the standard cost value shows NO INCREASE.

2.5.3 Phase Down Stage C

Stage C begins when revenue shipments have fallen to approximately 10% to 15% of steady sales rates.

The following issues shall be taken into consideration during Stage C.

- *Consolidation and Cataloging of Digital Owned Vendor Tooling*

  A complete record must be made of all unique tools maintained by the supply base used in the manufacture of the PPD product. The record must contain:

  — Supplier name and address

  — Tooling part number with cross-reference to the manufactured part number

  — Current condition of the tooling

  — The reasonable number of additional parts that could be produced from the tooling, if required

  It shall also be determined if the tooling will be maintained by the supplier for some agreed upon period of time, or if it is to be returned to Digital. If it is to be returned to Digital, the storage location shall be specified.

- *Internal/External Process Archiving*

  The need to better understand and manage what we shall archive and how we archive has become increasingly important as we explore opportunities for sales of our older technology products in Third-World Markets.

  If it has been determined during this phase that the PPD product may have some potential sales opportunities for the future in these markets, careful and thorough attention must be given to the archiving of tools, processes, and documentation, which are unique and would be expensive to reproduce.

  This Committee's intent is to bring an awareness to these requirements and not set forth policies and procedures for the archival process (refer to subhead 2.8, Archiving).

- *Capital Equipment Disposition*

  Procedures shall be followed in accordance with MEM Policy 7-100, *Manufacturing/Engineering Financial Control Policy and Procedures - Disposition of Idle, Surplus, Obsolete and Scrap Capital Equipment*.

- *Obsolete Inventory Disposition*

  Procedures shall be followed in accordance with MEM Policy 6-125, *Manufacturing/Engineering Financial Control Policy and Procedures - Disposition of Excess, Obsolete and Scrap Inventory*.

2.5.4 Matched Sets and Can-Build Analysis

After receiving validation that a product has entered its manufacturing PPD, the End Product Producer is responsible for completing a Matched Sets/Can-Build Analysis. In Phase Down Stage A of the product's Phase Down cycle, the responsible organization, the PCU, identifies imbalances throughout the pipeline at each Manufacturing stage and forces future balance. This process is continued, at a minimum, on a quarterly basis, while the product continues to decline in its phase down stages. Some organizations may elect to do this analysis on a monthly basis for some products.

The Matched Sets/Can-Build Analysis is completed as follows, using the Pipeline Manager tool.

- Determine what exact quantity can be built from matched sets, and what inventory value would be used at each location, in each stage, throughout the pipeline. Include usable Customer Services inventory in this analysis.
- Determine at each location and stage throughout the pipeline, what part numbers, quantity, and dollar value of inventory are above and beyond the Matched Set/Can-Build quantity.
- Ensure that each location adjusts future build plans and piece part plans to bring all stages throughout the pipeline into a Matched Set balance equal to the forecasted demand over the cumulative lead time.
- Ensure through monthly/quarterly reviews of the product's pipeline that build plans, master production schedules, and piece part inventories (inclusive of all independent and spares demand) are kept in balance with the agreed-to PPD build quantity in Manufacturing.

2.5.5 Optimum Build Quantity

Financial Model

After the product has been verified to be PPD per the PPD Recognition Criteria (refer to subhead 2.1.1), and immediately after the completion of the Matched Sets/Can-Build Analysis (refer to subhead 2.5.4), the PCU Product Manager shall determine, on a quarterly basis until the final PPD build quantity is determined, the optimum build quantity using the financial model Figure 4. The model addresses the following questions.

- What is the inventory (matched sets), in the entire pipeline, including usable Customer Services inventory?
- What incremental dollar investment would be required to build additional products, at various quantities, including:
  - Material
  - Labor
  - Overhead
  - Capital
- What is the remaining marketing opportunity, including the results of a Price Elasticity Analysis?
- What is the impact on other Digital product margins, at various sales levels of the PPD product?
- What is the optimum cash flow position?

Result: Seize the optimum (or as near as possible) and show that making and selling 25% more or less units is financially not attractive (refer to Figure 4).

In order to consider changes in business conditions, the Optimum Build Quantity shall be regenerated every quarter (at a minimum) until the final PPD build quantity is identified. (Some organizations, for some products, may elect to evaluate optimum build on a monthly basis.)

The final PPD build quantity is determined by the PCU Product Manager with input from the following.

- Tactical Volume Management Committee (TVMC)
- Manufacturing Operations
- Manufacturing/PCU Forums

Figure 4: Financial Analysis

PRODUCT PHASE DOWN
CASH FLOW ANALYSIS
($ MILLIONS)

PERIOD COVERED
Q__ FY__ TO Q__ FY__

	–25%	PLAN	+25%
● UNITS			
● PRICE			
● INCREMENTAL MAYNARD LIST PRICE			
● DISCOUNT / ALLOWANCE			
● INCREMENTAL NET OPERATING REVENUE			
● OUT–OF–POCKET COST TO MANUFACTURE			
MATERIAL			
LABOR			
OVERHEAD			
SUBCONTRACT			
● TOTAL			
● INCREMENTAL CAPITAL			
● OUT OF POCKET SELLING COSTS/ DISTRIBUTION COSTS			
● GROSS MARGIN			
● IMPACT ON OTHER DIGITAL PRODUCTS			
● BEFORE TAX CASH FLOW			
● UNITS			
EXISTING FINISHED GOODS + BUILD PLAN			
SHIP PLAN			
● REMAINING INVENTORY	$	$	$
● OBSOLESCENCE			

2.5.6 Decision-Making and Management Process

At the point that a PPD build quantity is determined and agreed to by the Field and Manufacturing, in conjunction with the PCU, it is important that the Corporation's PPD plans are carefully orchestrated to achieve Customer Satisfaction and optimum asset use.

Ensuring that Manufacturing plans and executes according to the Corporation's PPD plan is through the validation and monthly reconciliation of the Corporate Demand/Supply Process.

It is believed that the PPD quantity is representative of Digital's extended contracts with its customers and includes an optimistic forecast of new business venture opportunities. It also must be presumed that, between Field Operations and the Product Manager, a comprehensive, customer-by-customer, product migration plan has been developed. This plan must be supported by Manufacturing and represent a maximum effort to achieve Customer Satisfaction. For a more detailed understanding of a PPD Plan, refer to EL-EN540-00.

Development and implementation of the PPD plan is a collaborative effort between the Field and Manufacturing with the principle driving force being the PCU Product Manager. The primary communication link between these groups is, and shall continue to be, the monthly Ship Plan Process.

The PCU Product Manager is responsible for reviewing monthly, Manufacturing build plans and Field demand plans for the purpose of validating and reconciling differences.

Manufacturing is responsible for stating, as its build plan, the agreed upon PPD build quantity.

It is expected that Manufacturing will represent the difference in Demand/Supply (assuming demand is not greater than supply) as inventory and not as planned output.

2.6 MANUFACTURING-TO-CUSTOMER SERVICES TRANSITION

The following is a write-up of the Customer Services PPD Philosophy and Operating System that will support transition of products from Manufacturing to Customer Services. This outline is supported by the Customer Services Logistics (CSL) Operating System and reflects the contents of the CSL - Digital Manufacturing Working Agreement negotiated with each manufacturing location.

As business partners with our customers and for as long as there is a customer need, Customer Services shall continue to support Digital hardware and software products, or develop customer-specific solutions when the Digital offerings are no longer available.

In order to ensure that there is no disruption in level of service to customers, it is imperative that Customer Services has a viable source for new build and repair of Field Replaceable Units (FRU) through End-of-Service Life (EOSL).

2.6.1 Digital Manufacturing - Customer Services Logistics Working Agreement

On an annual basis, Customer Services shall establish a Working Agreement between Customer Services Logistics and each Digital Manufacturing Plant for procurement of:

- New Service Parts
- Options (Repair/New Build)
- Raw Material Components

It is expected that this Working Agreement will establish the framework for working relationships and, therefore, manage the needs and expectations of each organization.

2.6.2 Product Transfer/PPD

The Working Agreement further specifies the procedure to be used by both parties if a decision is made to terminate new build and/or repair support during the period of the Working Agreement. The purpose of this part of the Working Agreement is to ensure that there is an orderly transfer of new build and/or repair support for products support by the specific manufacturing location without any disruption to the level of customer service support.

- *Repair Transfer*

  If, during the period of the Working Agreement, a manufacturing facility determines that it cannot continue to repair a product, it must provide written notice to Customer Services Logistics. These products shall be identified at a minimum at the Quarterly Operations Review.

  Customer Services Logistics may transfer responsibility for repair, including the repair process, if the repair facility fails to meet reliability, quality, delivery, or cost specifications.

  In the event of a repair transfer, the present Repair Facility shall provide:

  — Continued repair support until the new source is operational

  — Documented repair processes and test software

  — Capital equipment unique to the repair process and/or not required by Manufacturing

  — Raw material as required to support the transfer

- *Manufacturing-to-Manufacturing Transfers*

  Customer Services Logistics shall be informed of any proposed transfer of product, or subcontracting of Customer Services repairs that impacts support of Customer Services. Such transfers are between Digital Manufacturing Plants or between Digital Manufacturing and outside suppliers. Customer Services shall participate as part of the transfer team to ensure that there is no interruption in level of service. For more detail on Manufacturing-to-Manufacturing transfers refer to the Appendix of the Q3/Q4 FY '88 issue of the PP&E (Product Planning and Execution) module of the Materials Architecture.

- *PPD Plan*

  During Phase 4B of the Corporate Phase Review Process, Customer Services shall prepare a detailed PPD Plan. This plan shall be incorporated into the PCU PPD Plan in Phase 4B. Also at this time, a transfer plan shall be negotiated between Customer Services Logistics and the Digital Manufacturing Plant. The transfer of new build and repair responsibility shall be planned to ensure continued support to customers.

  During the transfer period, the Digital Manufacturing Plant shall provide the following.

  — Ongoing new build/repair support

  — Documentation including engineering drawings, specifications, builds, repair and test processes

— Unique test equipment, test software and raw material inventory as requested and negotiated by Customer Services

— Other items and support that will be detailed in *Guidelines for Product Transfer at Product Phase Down*, which is maintained by Customer Services and provided as part of the working agreement to each Digital Manufacturing location.

2.7 SOFTWARE VERSION LIFE CYCLE MANAGEMENT

This heading provides guidelines for the management of Digital software products. The nature of the software business is that of continual change and enhancement to the software products that Digital sells. This brings its own unique set of requirements to effectively supply product to the required service levels while minimizing the cost of obsolescence when a software product changes revision (particularly the documentation). This heading provides guidelines that shall be followed in managing the introduction and PPD of the documentation components of software products.

2.7.1 Recognizing PPD Product

Version Life Cycle Management starts with the introduction of a new version (V1.0) software product and continues throughout the life of that product and all of the versions that it moves through. Manufacturing Management must play a major and ongoing role to ensure that at the outset there is sufficient data available about a software product to enable cost-effective sourcing decisions for the documentation component. Such decisions must by their nature take account of:

- Worldwide product demand
- Area sourcing strategies
- Time-to-market goals for SPS business
- Follow-on versions of the product and the potential documentation changes that will occur

Simply stated, only when all of these variables have been analyzed and considered can a decision be made about how much and how often the documentation of a software product must be printed in order to:

- Avoid unnecessary reprints
- Minimize worldwide obsolescence of documentation as the product changes version
- Minimize the time-to-market for the product and make it available in all geographies in the shortest possible time
- Minimize average inventory investment in the documentation component throughout the life cycle of the software product

Therefore, PPD recognition for software products shall take place not during the ongoing demand or stable period demand, but right at the introduction of the first version of the product. At this stage, Manufacturing shall have a product plan in place that reflects product supply strategy, taking into account all of the variables mentioned above.

2.7.2 Material Planning and Acquisition Guidelines

This section sets out the guidelines for material planning and acquisition of the documentation of software products. Version Life Cycle Management begins with the planning of the introduction of a Version 1 software product and all subsequent versions. The minimum information required is as follows.

- *Bill of Materials (BOM)*

  The BOM for the current version together with all planned changes to documentation components through the next 18 months shall be made available to Manufacturing. Manufacturing Product Management needs to work closely with the Software PCUs to make this available to the planning processes.

- *Anticipated Future Demand*

  A ship forecast for ongoing demand and updates (as follow-on versions are introduced) shall be made available through the One Plan process in order that a consolidated forecast on a worldwide basis can be generated for use in the Product-Sourcing Strategy decisions. Forecasts need to be generated first at the local level and then consolidated on a worldwide basis in order for an effective sourcing strategy to be developed that balances all of the objectives of the Corporation, that is:

  — Local content

  — Time-to-market

  — Least total landed cost

  — Inventory quantities to be held in relation to service levels required

When product content and anticipated demand have been established, the product-sourcing decisions need to be made by Manufacturing Management. This process shall involve the Material Planning and Acquisition personnel from the Supply plants and Business Management personnel from the Software Manufacturing Business Unit.

Based on the information available, the analysis shall be performed that shows the number and size of print runs that will be required to support the supply of the current and follow-on versions of a product throughout an 18-month horizon. The analysis shall take account of the Manufacturing Local Content Goals and derive the most cost-effective overall Product Supply strategy showing clearly the number of print runs, where they will take place, their cost, and distribution costs.

In addition, there shall be a planned amount of inventory to deal with prior-to-version demand as the current versions are superseded by a follow-on version of the product. The amount and locations for such inventory shall be determined in advance (as far as possible) and included in the overall Product-Sourcing Strategy.

Because of the service nature of software products, there is a requirement to supply prior versions. Such request for product are treated as archive requests and shall be met in some cases by inventory that has been planned for this purpose. It is impractical to hold inventory to support all prior version requests for a product. Therefore, it is necessary to ensure that the documentation masters for a product are retained in compliance with the archiving guidelines set out in subhead 2.8.

2.8 ARCHIVING

The following section addresses the importance of the archiving process.

2.8.1 Archiving Decision

Products are phased out of manufacturing based on their lack of economic demand in the current marketplace. However, that marketplace is not finite in size and, in fact, Digital actively encourages its continued growth. New customers in emerging markets are not always ready for the latest technology. For that reason, it is necessary to evaluate each product during the phase down process (Phase Down Stage C) to determine whether the restart of its manufacture will be easy or desirable. This is accomplished by archiving key hardware and documentation internal to Digital and at key supplier sites. Since archiving can be costly, the decision to do so must be prudently arrived at by those closest to the product and by those who can best evaluate its potential in an expanded marketplace. The Greater PCU is ultimately responsible for making this decision, and it is Manufacturing Management's responsibility to accomplish the actual archiving.

2.8.2 Limits of Archiving Decision

The archiving decision made by the Greater PCU is for the purpose of meeting the objectives of this document only — that is, to support the possible restart of manufacture. It does not affect other archiving requirements of the Corporation, such as those that satisfy patent protection, product liability, and other similar regulatory agency rules and regulations.

2.8.3 Supplier Archiving

Typically, Basic Order Agreement (BOA) contracts contain spares clauses that ensure archiving by those suppliers. However, it is appropriate during Phase Down Stages B and C to review those contracts and the parts involved to ensure adequacy. It is also appropriate during this period to list non-BOA suppliers of key parts and take steps to ensure proper archiving of key supplier-owned tooling and processes.

2.8.4 Archiving Techniques

Manufacturing Management must ensure adequate storage and protection for archived material. Economy is an important consideration but most important is the practical, cohesive and timely re-establishment of the manufacturing process. The best possible storage techniques must be employed to protect document media, hardware, and tooling from corrosives.

2.8.5 Archiving Period

The archiving duration shall be determined by the Greater PCU when the decision to archive is made. If the decision cannot be made at that time, then an agreement must be made to meet and re-evaluate periodically until such a decision can be made.

2.8.6 The Archiving List

The following is a list of items that must be archived when appropriate to the product involved. Manufacturing Management must decide on items appropriate to the product involved that must be archived but are not on this list.

- *Documents and Documentation*
  - — Manufacturing plan
  - — Prints (UAs, KPLs)
  - — Purchase specifications (BOM material and critical non-BOM material)
  - — Manufacturing BOMs with revisions
  - — ECO history file
  - — Electrical schematics
  - — Wire lists
  - — Functional specifications (all versions and variants)
  - — Assembly procedures
  - — Test procedures
  - — Inspection and audit procedures
  - — Process capability specifications
  - — Manufacturing physical layout specifications
  - — Manufacturing flow diagram
  - — Qualified supplier list
  - — Incoming inspection - critical parts history
  - — Key personnel list
  - — License agreements
  - — Ship list
  - — Design and process verification and maturity test results
  - — Plant/group phase-in/phase-out business/manufacturing plans
  - — Supplier processes (critical parts)
  - — Financial and yield metrics
  - — Labor standards
- *Hardware*
  - — Tooling
  - — Digital owned tooling at external sites
  - — Unique or difficult to replace test equipment, jigs
  - — Diagnostics and test software or appropriate media
  - — Example of product (actual or model)
  - — Supplier tooling

CHAPTER 3

PPD AND THE PHASE REVIEW PROCESS

This chapter outlines the major responsibilities for PPD on the parts of the Materials organizations within the Manufacturing community and Customer Services Logistics. The duties are interwoven with and dependent upon a functioning phase review process. They consist of two matrices (Figure 5) that catalog the activities and responsibilities of the six major Manufacturing Materials functions, which are Demand/Supply, Inventory Planning, Production Control, Order Administration, Distribution and Material Acquisition, and the function of Customer Services Logistics.

The matrix format is compatible with similar matrices contained in the New Products Module of the Corporate Materials Architecture. Used together, the matrices from both documents provide a simplified checklist of activities required of Materials throughout the entire product life cycle. Although simplified, the matrices are fairly definitive in terms of objectives and their related inputs, outputs, and dependencies.

Not all of the detail inputs and/or outputs apply to the Manufacturing Management of software. However, the Software Version Life Cycle Management in subhead 2.7 of this document highlights the important uniqueness of Software Manufacturing for PPD.

Since the matrices are replete with abbreviations and acronyms, a glossary is provided in subhead 3.3.

3.1 MAJOR REVIEW MATRIX - PPD

The matrices in Figure 5 define major review output or deliverables catalogued by responsible materials functions vertically and phase review transition points horizontally. The *italic* font is from the New Products Module while the **bold** font is Manufacturing PPD.

Phase review transition points used here are comparable to those defined in *DEC STD 028-0 Phase Review Policy*.

3.2 INPUT/OUTPUT MATRIX WITH DEPENDENCIES

The matrices that follow are sorted by responsible Materials function and Customer Services Logistics and identify the required inputs, the anticipated outputs, and the responsible function to deliver the input data. The responsible functions for the input data are found in subhead 3.3 and are for the most part functions within Digital other than Materials.

3.3 ABBREVIATIONS AND ACRONYMS

Following is a list of acronyms and abbreviations used in Figures 5 through 18.

ATO: Assembly to Order

BOA: Basic order agreement

BTO: Build to Order

BU: Business unit

CS: Customer Services

CSL: Customer Services Logistics

DE: Design Engineering

DIAL: Digital Idle Asset Listing

DOC CON: Document Control

DS: Demand and Supply

DST: Distribution

FAC: Facilities

FIN: Finance

F/G: Finished Goods

IC: Inventory Control

MA: Material Acquisition

MBU: Manufacturing Business Unit

MAT: Materials

ME: Manufacturing Engineering

MIS: Management Information Systems

OA: Order Administration

OTS: Off the Shelf

PCU: Product Creation Unit

PC: Production Control

PERS: Personnel

PLAN: Planning

PM: Product Management

PMM: Plant Materials Manager

PPD: Product Phase Down

PROD: Production

QUAL: Quality

SPM: System Program Manager

WIP: Work in Process

Figure 5: Major Material Phase Review Exit Criteria

MANUFACTURING IMPACT STATEMENT PHASE 0 STRATEGY	PRELIMINARY MANUFACTURING PLAN PHASE 1 PLANNING	MANUFACTURING PLAN PHASE 2 DESIGN
DEMAND/SUPPLY o *Publish Demand Projection and Schedule to Manufacturing and Field*	DEMAND/SUPPLY o *Pub. Approved Volumes* o *Est. Product Planning Levels* o *Review at Collaborative Forums* o *Phase In/Out Data in Monthly Tactical Volume Plan*	DEMAND/SUPPLY o *Planning BOMs on File*
ORDER ADMINISTRATION o *Rough Cut Administrative Impact Appraisal*	ORDER ADMINISTRATION o *OA Sys and Process Selection* o *Sys and Process Changes Defined (As Required)* o *Preliminary Worldwide Order Sourcing Strategy*	ORDER ADMINISTRATION o *Finalize Order Fulfillment and Delivery Process* o *OA BOMs on File* o *Define Pre–production Shipment and Order Mgmt Process* o *Publish Mfg. Lead Times*
MATERIAL ACQUISITION o *Capital/Resource Budget* o *Make/Buy Alternate System Level* o *Sourcing Strategies for Buyouts* o *Transfer Cost Targets*	MATERIAL ACQUISITION o *Lead Time Risk Assessment* o *Make/Buy Alternate Subassembly Level* o *Commodity Sourcing Strategies Defined* o *Prototype Material Ordered*	MATERIAL ACQUISITION o *Comp. Qualification Complete* o *Int/Ext Suppliers Selected* o *QVL Updated* o *5–Year Cost Projections* o *Production Material Ordered* o *Tooling Contracts*
INVENTORY PLANNING o *Rough Cut Materials Cost Analysis*	INVENTORY PLANNING o *Preliminary Pipeline Strategies RAW, WIP, F/G* o *Ind/Dep Prod. Support Strat.* o *Plng Systems Links Defined* o *Proto/Pilot OBS Risk Agrmnt* ● **Replace/Displace Product Impact to Pipeline Inventories**	INVENTORY PLANNING o *Finalized Mat'l Plng BOMs* o *Pre–production Rev Control Process* ● **Pipeline Inventory Plans**
PRODUCTION CONTROL	PRODUCTION CONTROL o *Process Lead Time* o *System Requirements Defined* o *Preliminary Production Inventory Strategies* – *RAW* – *WIP* – *F/G*	PRODUCTION CONTROL o *Master Production Schedule* o *Job Routing Sheets* o *Establish Production Cost* o *Manufacturing BOM on File* o *Mfg. Process Lead Times* o *Measurements & Rptg Process* o *Defined Repair/Return Process*
DISTRIBUTION o *Dist. Consid. for Prod. Design* o *Distribution Impact Appraisal* – *Mfg. Location Plans* – *Dist. Channels* – *F/G Sourcing Buyouts* o *Dist. Cost Assessment* – *Inbound/Outbound Freight* – *Warehousing*	DISTRIBUTION o *Dist. Impact Appraisal* – *Component Sourcing/Stocking* – *Order Sourcing* – *Service Requirements* o *Material Flow Design* o *Distribution Cost Projection* o *Product Packaging Review*	DISTRIBUTION o *Develop Distribution Plans* – *Systems* – *Facilities* – *Transportation* – *Import/Export Compliance* o *Distribution Cost Commitment*
CUSTOMER SERVICES o *CSL Impact Statement* o *Integrate CSL and DEC Manufacturing New Build and Repair Processes*	CUSTOMER SERVICES o *CSL Product Plan* o *Identify New Build and Repair Sources* o *Review Working Agreement with DEC Manufacturing*	CUSTOMER SERVICES o *CSL Product Plan* o *Develop FRU/Repair/Kit Strategies* o *Develop Preliminary Inventory and Distribution Strategies* o *CSL Requirements to Demand/Supply* o *Sign Vendor Contract* o *CSL Requirements to DEC/Vendor Sources*

o *Italic Font = New Product Major Outputs*

● **Bold Font = Product Phase Down**

MANUFACTURING PLAN PHASE 3 QUALITY/PRODUCT	PRODUCT RAMP PHASE 4 MANUFACTURING PRODUCT	MANUFACTURING PHASE DOWN PHASE 5 PPD
DEMAND/SUPPLY ● **Field/Manufacturing Phase In/Phase Out Strategy**	DEMAND/SUPPLY ● **ID Peaked Maturity Curve Products**	DEMAND/SUPPLY ● **Collaborative Forum Review** ● **Volume Tie** ● **PPD Numbers**
ORDER ADMINISTRATION ● **PPD OA Admin Appraisal** o *Post Delivery Feedback Process*	ORDER ADMINISTRATION ● **Redefine Order Fulfillment Plans** ● **Backlog Mgmt Procedures** ● **Restate Product Lead Times** ● **Modify Order/Mfg Source Codes**	ORDER ADMINISTRATION ● **Final O/A Plan** ● **Develop Critical Demand Process** ● **Coordinate O/A Change Activity** **−Price File** **−Segmentation Codes**
MATERIAL ACQUISITION ● **ID Product/Subassembly Displaced** ● **ID Product Specification Changes** o *Material Cost Reduction Plan* o *Corporate BOA/Contracts*	MATERIAL ACQUISITION ● **Vendor Base Evaluation** ● **Reduce Multi Sources** ● **Restate Lead Times** ● **Determine Vendor Liability**	MATERIAL ACQUISITION ● **Redefine Material Acquisition Process**
INVENTORY PLANNING ● **Rough Cut Inventory Impact (Pipeline)** ● **Displaced Product Inventory Strategy**	INVENTORY PLANNING ● **Pipeline Inventory Evaluation** ● **Matched Sets PPD Inventory Plans** ● **Redefine Pipeline Sourcing**	INVENTORY PLANNING ● **Define Inventory Exposure**
PRODUCTION CONTROL ● **PPD Resource Plan** ● **PPD Preliminary Impact Appraisal** **−Space** **−People** **−Equipment**	PRODUCTION CONTROL ● **Redefine P/C Process** **Routing** **Reporting** ● **Restate Mfg. Lead Times** ● **Develop Asset Plan** **− People** **− Space** **− Equipment** ● **ID Excess Equipment** ● **Cost Management Plans** ● **Redefine Repair/Return Process**	PRODUCTION CONTROL ● **Equipment Disposition Plan**
DISTRIBUTION ● **PPD Preliminary Warehouse Impact Appraisal** **−Space** **−People** **−Equipment**	DISTRIBUTION ● **Redefine Site and Stocking Plans** ● **Redefine Order Consolidation Plans** ● **Restate Material Flow** ● **Cost Management Strategies**	DISTRIBUTION ● **Finalize and Implement Distribution Plan**
CUSTOMER SERVICES ● **CSL Product Plan** ● **CSL/Repair/Kit Menus on File** ● **Finalize Working Agree–ment with DEC Mfg** ● **New Build and Repair Sources Established** ● **CSL Requirements/ Manufacturing Commit** ● **FRU and Component Mat'l Delivered to CSL**	CUSTOMER SERVICES ● **CSL Preliminary PPD Plan** ● **New Build and Source Transfers** ● **Update Source Working Agreement and Contracts** ● **CSL Input to PPD Business Plan**	CUSTOMER SERVICES ● **CSL PPD Plan** ● **PPD New Build and Repair Source Transfers** ● **Implement CSL PPD Plan**

Figure 6: PPD Input/Output Model Matrix - Demand/Supply

DEMAND/SUPPLY

DISPLACED PRODUCT CRITERIA APPLIED THROUGH THE NEW PRODUCT

DEPENDENCIES										INPUT	OUTPUT
PM	SPM	DE	ME	DS	OA	DST	PC	IC	MA		
										PHASE 1	
X	X	X								IDENTIFY PRODUCT DISPLACED BY NEW PRODUCT	PHASE IN/PHASE OUT DATA PUBLISHED IN MONTHLY TACTICAL VOLUME PLAN
X	X									UNIT VOLUME IMPACT OLD VS NEW	
X	X									DOLLAR IMPACT OLD VS NEW PROJECTED	
X		X								PROJECT NEW/OLD PRODUCT TIMING IMPACT	
										PHASE 3	
X					X					FIELD CUSTOMER MIGRATION STRATEGY	TACTICAL VOLUME PHASE IN/PHASE OUT STRATEGIES
	X									ONGOING CUSTOMER SUPPORT PLANS	
							X	X		MANUFACTURING SUPPORT STRATEGIES o WHERE o WHEN o HOW	
	DISPLACED PRODUCT CRITERIA (DIRECTLY APPLIED)									PHASE 4B	
					X					CERTS RATE	PUBLISH LIST OF PRODUCTS THAT HAVE REACHED PEAK OF MATURITY CURVE
							X			ACTUAL SHIPMENTS	
					X					SHIP PLANS	
					X			X		CHANGES IN INVENTORY	
										PHASE 5	
								X	X	OPTIMUM MANUFACTURING PPD NUMBERS	MGT. REVIEW FOR CUSTOMER SERVICES TIE
X	X			X						FIELD PPD NUMBERS	PUBLISH PPD NUMBERS

Figure 7: PPD Input/Output Model Matrix - Order Administration

ORDER ADMINISTRATION

DISPLACED PRODUCT CRITERIA APPLIED THROUGH THE NEW PRODUCT

DEPENDENCIES										INPUT	OUTPUT
PM	SPM	DE	ME	DS	OA	DST	PC	IC	MA		
										PHASE 3	
X				X						UNIT VOLUMES	ROUGH CUT ORDER ADMINISTRATION APPRAISAL
X	X									ESTIMATED ORDER VOLUMES	
	DISPLACED PRODUCT CRITERIA (DIRECTLY APPLIED)									PHASE 4B	
X				X						WORLDWIDE SALES PLANS	RE–DEFINE ORDER FULFILLMENT PLANS WORLDWIDE
X				X			X			CUSTOMER SERVICES STRATEGY – BTO – ATO – OTS	DEVELOP BACKLOG MANAGEMENT PROCEDURES
						X	X			DEFINED CUSTOMER LEADTIME	PUBLISH REVISED PRODUCT MANUFACTURING LEADTIMES
							X		X	MANUFACTURING & DIST. PART SOURCING PLANS	MODIFY ORDER AND MFG. SOURCE CODE FILES AS REQUIRED
				X		X	X			FIELD CUSTOMER ORDER PLANS	
										PHASE 5	
X							X	X		FINAL PLANS – MANUFACTURING – DISTRIBUTION	FINALIZE OA PLANS
X										FIELD CUSTOMER PRODUCT MIGRATION PLANS	DEVELOP SCHEDULE OF OA ACTIVITIES RELATIVE TO: o PRICE FILE o SEGMENTATION CODES
X				X			X			MANUFACTURING PPD QUANTITIES	
X	X									PRODUCT LINE REVENUE MANAGEMENT RESPONSIBILITY	CRITICAL DEMAND MANAGEMENT PROCESS

Figure 8: PPD Input/Output Model Matrix - Material Acquisition

MATERIAL ACQUISTION

DISPLACED PRODUCT CRITERIA APPLIED THROUGH THE NEW PRODUCT

DEPENDENCIES										INPUT	OUTPUT
PM	SPM	DE	ME	DS	OA	DST	PC	IC	MA		
										PHASE 3	
											IDENTIFY END PRODUCT/SUB–ASSEMBLY DISPLACED
											IDENTIFY PRODUCT SPECIFICATION CHANGES
	DISPLACED PRODUCT CRITERIA (DIRECTLY APPLIED)									PHASE 4B	
X				X			X			OPT. MANUFACTURING PPD NUMBERS	
X								X	X	MANUFACTURING SOURCE STRATEGY	SUPPLY BASE EVALUATION
						X				ORDER ADMINISTRATION STRATEGY	REDUCE MULTIPLE SOURCE STRATEGIES
						X		X		MANUFACTURING LEAD TIMES	RE–NEGOTIATE SUPPLIER LEAD TIME
											RE–DEFINE SUPPLIER LIABILITY
										PHASE 5	
X				X						UNIT VOLUMES PPD QUANTITIES	RESTATE INTERNAL/EXTERNAL ACQUISITION PROCESS
											CAPITAL DISPOSITION
											PPD BUYS
											OBSOLESCENCE DISPOSITION MANAGEMENT PROCESS (DIAL) (6–125)

Figure 9: PPD Input/Output Model Matrix - Inventory Planning

INVENTORY PLANNING

DISPLACED PRODUCT CRITERIA APPLIED THROUGH THE NEW PRODUCT

DEPENDENCIES										INPUT	OUTPUT
PM	SPM	DE	ME	DS	OA	DST	PC	IC	MA		
										PHASE 3	
				X						UNIT VOLUMES	ROUGH CUT INVENTORY IMPACT (PIPELINE)
X		X								IDENTIFY END ITEM DEPENDENT PRODUCTS DISPLACED	
				X			X			NEW PRODUCT VOLUME RAMP SCHEDULE	PRODUCT INVENTORY DISPLACEMENT STRATEGY IN PLACE
	DISPLACED PRODUCT CRITERIA (DIRECTLY APPLIED)									PHASE 4B	
				X						PPD QUANTITIES/UNIT VOLUMES	CORPORATE PIPELINE INVENTORY EVALUATION o RAW UNITS/$ o WIP UNITS/$ o F/G UNITS/$ o FIELD STOCKROOM ON–HAND QUANTITIES
X				X			X			CUSTOMER SERVICES PRODUCT SUPPORT REQUIREMENTS	MATCH SETS PPD PLANS RE–DEFINE PIPELINE INVENTORY AND SOURCE PLANS
										PHASE 5	
X				X						PPD QUANTITY	DETERMINE INVENTORY EXPOSURE
X				X						CUSTOMER SERVICES REQUIREMENTS	
								X		UNMATCH COMPONENT SUBASSEMBLY LISTINGS (PIPELINE)	

Figure 10: PPD Input/Output Model Matrix - Production Control

PRODUCTION CONTROL

DISPLACED PRODUCT CRITERIA APPLIED THROUGH THE NEW PRODUCT

DEPENDENCIES										INPUT	OUTPUT
PM	SPM	DE	ME	DS	OA	DST	PC	IC	MA		
										PHASE 3	
				X						UNIT VOLUMES PRODUCT TIMING	PRELIMINARY IMPACT EVALUATION o SPACE o EQUIPMENT
X		X									
X		X		X						NEW PRODUCT RAMP SCHEDULE	
	DISPLACED PRODUCT CRITERIA (DIRECTLY APPLIED)									PHASE 4B	
			X							MANUFACTURING PROCESS IMPACT	REDEFINE PRODUCTION CONTROL PROCESS o ROUTINGS o REPORTING
			X							MANUFACTURING FLOW	
X	X			X	X	X	X	X	X	REPORT REQUIREMENTS	
X				X						MANUFACTURING RETURN/ REPAIR STRATEGY	RESTATE MFG. LEAD TIME RE–PLAN PEOPLE, SPACE, EQUIPMENT
X				X						FIELD RETURN/REPAIR STRATEGIES	IDENTIFY EXCESS EQUIPMENT
				X						UNIT VOLUMES	DEVELOP COST MANAGEMENT PLANS REDEFINE REPAIR/RETURN PROCESS
										PHASE 5	
X				X						PPD QUANTITY	DISPOSITION EQUIPMENT
X				X						FINAL FIELD REPAIR/ RETURN PLAN	

Figure 11: PPD Input/Output Model Matrix - Distribution

DISTRIBUTION

DISPLACED PRODUCT CRITERIA APPLIED THROUGH THE NEW PRODUCT

DEPENDENCIES										INPUT	OUTPUT
PM	SPM	DE	ME	DS	OA	DST	PC	IC	MA		
										PHASE 3	
				X						UNIT VOLUMES	PRELIMINARY WAREHOUSE IMPACT APPRAISAL o SPACE o PEOPLE o EQUIPMENT
	DISPLACED PRODUCT CRITERIA (DIRECTLY APPLIED)									PHASE 4B	
					X			X		CUSTOMER SERVICES STRATEGIES o BTO o ATO o OTS	REDEFINE STOCKING AND LOCATION PLANS
X					X		X		X	COMPETITIVE LEAD TIMES	REDEFINE ORDER CONSOLIDATION PLANS
							X		X	MANUFACTURING AND ORDER SOURCING STRATEGY	RESTATE MATERIAL FLOW
							X		X	INVENTORY PLANS o F/G o WEEKS o PIPELINE	DISTRIBUTION COST MANAGEMENT STRATEGIES COST ANALYSIS SUPPORT FOR MANUFACTURING AND ORDER ADMINISTRATION SOURCING DECISIONS
										PHASE 5	
X					X		X		X	FINAL PLANS: o OA o MANUFACTURING o MATERIAL ACQUISITION	FINALIZE AND IMPLEMENT DISTRIBUTION PLANS DUTY MANAGEMENT PHYSICAL DISPOSITION OF OBSOLETE MATERIAL

Figure 12: PPD Input/Output Model Matrix - Customer Services

CUSTOMER SERVICES

DISPLACED PRODUCT CRITERIA APPLIED THROUGH THE NEW PRODUCT

DEPENDENCIES										INPUT	OUTPUT
PM	SPM	DE	ME	DS	OA	DST	PC	IC	MA		
										PHASE 3	
	DISPLACED PRODUCT CRITERIA (DIRECTLY APPLIED)									PHASE 4B	
X										PPD BUSINESS PLAN	CSL PRELIMINARY PPD PLAN
				X						SHIP PLAN	NEW BUILD AND REPAIR SOURCE TRANSFERS
				X						CRITICAL PARTS DATA	
							X		X	MFG. PPD NOTICE	UPDATE SOURCE WORKING AGREE–MENTS AND CONTRACTS
											CSL INPUT TO PPD BUSINESS PLAN
										PHASE 5	
				X						SHIP PLAN	CSL PPD PLAN
				X						CRITICAL PARTS DATA	PPD NEW BUILD AND REPAIR SOURCE TRANSFERS
								X	X	MFG. PPD ECO DATA	
								X	X	REPAIR/NEW BUILD	IMPLEMENT CSL PPD PLAN
								X	X	LAST TIME BUILD	NOTIFY CUSTOMERS OF END–OF–SERVICE LIFE
								X	X	PROCESS DOCUMENTATION	END SERVICE LIFE
X										REMOVE FROM PRICE LIST	

CHAPTER 4

WORLDWIDE MANUFACTURING CROSS-FUNCTIONAL INTEGRATION

This chapter reflects major output and exit criteria statements that affect all functions within Manufacturing. The chapter is sorted by the major Manufacturing functions showing their responsibilities within Manufacturing for PPD. The functions that are contained are Manufacturing Engineering, Quality Engineering, Finance, Personnel, MIS, Product Manufacturing Business Unit, Manufacturing Systems Program Manager or Manufacturing Project Leader, Plant, and Planning. These functions are contained in subheads 4.1 through 4.9.

Input/output charts (Figures 13 through 18) for each of the above functions, except for Plant and Product Manufacturing Business Unit, are presented throughout the chapter. The input/output chart shows the major inputs required by the subject function, where the inputs shall come from and the expected output of that function during the appropriate phase of the Corporate Phase Review Process. Refer to subhead 3.3 for an explanation of the dependency abbreviations.

The intention of this chapter is to broaden the scope of these Manufacturing Product Phase Down Guidelines to include more than the extended Materials functions that have been covered in the rest of this document.

4.1 MANUFACTURING ENGINEERING

This section is broken down into Document Control and Process Engineering.

4.1.1 Document Control

The Document Control Group is responsible for physically archiving and tracking vital records produced by Product Engineering along with the Phase Transition Business Plans. Some of these vital records are as follows.

- Drawing package
- Product specifications
- Process specifications
- Purchasing specifications
- Test equipment specifications
- Packaging specifications
- Component specifications

Refer to *DEC STD 188-0 Archiving Engineering Information: Policy and Procedures* for further information.

4.1.2 Process Engineering

The Process Engineering Group must do the following.

- Define the archival process and identify and validate vital records selected for storage, such as:
  - — Drawing package
  - — Product specifications
  - — Process specifications
  - — Test equipment specifications
  - — Packaging specifications
  - — Component specifications
  - — ECO/TCO specification alterations
- Establish which processes shall be phased out, and when.
- Determine plan to ensure that the phase-in of a new process line meshes with the phaseout of the old.
- Determine if line setup changes are required, or would be beneficial, as the product ramps down.
- Establish contingency plans (in the manufacturing flow) should the new product rampup proceed slower than planned.
- Determine if Value Engineering is required, or justifiable, during PPD.
- Verify that the ECO and REV CON processes shall remain intact through PPD.
- Determine impact of ECO decisions on Field and Refurbishment activities.
- Determine impact of ECO activities on long-term storage plans, and contractual agreements.
- Work with the Quality organization to establish plans for long-term storage.
- Work with the Quality organization to make any changes in the manufacturing process.
- Work with Production staff to determine changes in level of preconfiguration and testing, and make and document any related changes in the manufacturing process.
- Clarify responsibility for defining test requirements and changes in test procedures. Ensure that ability to test the product shall remain until established transfer to Customer Services.
- Define future test support responsibilities.
- Determine what equipment must be retained for testing, developing resource deployment plan.
- Monitor System Integration Engineering testing requirements.
- Develop Engineering Human Resource plan, covering retention and redeployment of resources, for the product during phase down.
- Transition relevant Engineering activities and resources to Customer Services.
- Develop ongoing support strategy; ensure post engineering support strategy.

4.1.3 Facilities

The Facilities Group must perform the following.

- Coordinate the inputs from Manufacturing Engineering and the Manufacturing Project Leader for the phase down.
- Ensure that space planning within the plant takes into account the timing and logistics of phase down and rampup of products.
- Ensure that adequate long-term storage is available, if required, with appropriate environmental conditions.

4.2 QUALITY

The Quality Group is responsible for establishing a quality strategy to assure that product quality is maintained or enhanced during phase down.

Customer Satisfaction metrics to be considered are:

- Test processes (both hardware and software)
- Quality yields
- Process controls
- Revision levels of product, spares, and assemblies
- Determination or validation of records to be archived
- Communication of data retention needs to MIS
- Integrity of storage secured for archival processes

4.3 FINANCE

The Finance Group is responsible for:

- Monitoring the execution of Product Phase Down Process Audits that:
  - — Ensure integrated plans
  - — Ensure that checklists are completed
  - — Ensure adherence to Corporate Product Phase Down Policies
- Asset evaluating
- Standard cost setting
- Inventory investment
- Carrying cost
- Duty drawback analysis
- Communicating financial database archiving needs to MIS
- Complying with Financial Data Retention needs for legal purposes.

4.4 PERSONNEL

The Personnel Group is responsible for:

- Coordinating the Human Resources Plan, including transition plans, plant closures.
- Developing contingency plans for career development and retraining, including:

  Redeployment
  Skills retention
  Quality of work life through phase down
  Reward and recognition

4.5 MIS

The MIS Group is responsible for:

- Identifying key software and databases that must be archived to ensure that data necessary for a product restart or reengineering shall be available to the Corporation. (Archiving methodology is to be based on archiving processes defined by Manufacturing Engineering.)
- Ensuring that databases are updated, both within the plant and external to the plant, (obvious ones would be BOMs and/or MIFs) that shall ensure that the product cannot be mistakenly sourced or built, nor material ordered to support the build of the product once it has completed final build and/or ship.

4.6 PRODUCT MANUFACTURING BUSINESS UNIT/GROUP MANUFACTURING

The Product Manufacturing Business Unit (PMBU)/Group Manufacturing must perform the following.

- Designate a Manufacturing Product Phase Down Project Leader in Manufacturing with the authority and influence skills necessary to lead Manufacturing through the phase down process.
- Develop a manufacturing strategy within PMBU to drive Life Cycle Management.
- Develop worldwide manufacturing PPD strategy in conjunction with the Product Creation Unit (PCU).
- Communicate the PPD strategy to the Manufacturing Systems Program Manager (MSPM) or Manufacturing Project Leader (MPL) and plants.

4.7 MANUFACTURING SYSTEMS PROGRAM MANAGER OR MANUFACTURING PROJECT LEADER

The MSPM or MPL must perform the following.

- Represent Worldwide Manufacturing - the PMBU, if relevant, and the plant - on the Product Manager's PPD Team.
- Chair the Manufacturing PPD Team, which is a subset of the Product Manager's PPD Team, covering all relevant plant and PMBU functions.
- Coordinate all manufacturing plans during PPD, including development of manufacturing milestones and delivery of plans to Product Manager for assimilation into the Phase 4B PPD Plan.

- Ensure that functions (within Manufacturing) understand their responsibilities and the timing of implementation.
- Act as Manufacturing's focal point (for communications to/within the plant, to Product Management, and other Digital organizations) on issues such as:

  Key dates during PPD, that is, last order, last ship
  Inventory planning and analysis
  Final build planning
  Manufacturing source, location, transition planning
  Manufacturing resource planning
  Manufacturing flexibility
  Standards and cost projection
  Quality
  Communications with Customer Services in regard to spares, repairs, sourcing, transitions
  Inventory disposition plans

- Ensure final report generation after phase down and bring Manufacturing responsibilities to closure, including archiving.

4.8 PLANT

The Plant must perform the following.

- Provide input to and implement the manufacturing functional plans during PPD.
- Establish a team to work PPD with the MSPM or MPL.
- Deliver function commitments (for detail, refer to individual functional responsibilities, that is, Materials, Quality).

4.9 PLANNING

The Planning Group must perform the following.

- Provide early warning and visibility to overall product/architecture migrations, relaying data from Engineering and the 3YP process.
- Work with the PMBUs and plants, integrating group data to avoid inconsistencies.

Figure 13: Manufacturing Cross-Functional Impact Matrix - Manufacturing Engineering

FUNCTION: MFG ENG (DOCUMENT CONTROL, PROCESS CONTROL, VALUE ENGRG, FACILITIES)

DEPENDENCIES												INPUT	OUTPUT	PHASE
BU	MBU/ PMM	CS	MAT	ME/DOC CON	QUAL	FIN	PLAN	MIS	PERS	FAC	PROD			
	X											MFG. PPD STRATEGY AND TIMETABLE	ME PROCESS PHASE IN AND PHASE OUT PLAN	4B
													CONTINGENCY PLANS (RISKS IN RAMP OF NEW)	4B
													CAPITAL DEPLOYMENT PLAN	4B
			X	X								CAPITAL DEPLOYMENT ME PROCESS PLAN INVENTORY PLAN	SPACE PLAN – PRODUCTION – TEST EQUIPMENT – LONG–TERM STORAGE	4B
	X											MFG STRATEGY AND TIMETABLE	VALUE ENGINEERING ASSESSMENT	4B
													TEST AND PROCESS CHANGES DUE TO LOW VOLUME, TECHNOLOGY, ETC.	5
													ECO CONTROL AND REV CONTROL – MAINTAINED AND COMMUNICATED. IMPACT OF CS REFURB. AND LONG–TERM STORAGE MANAGED	5
	X	X	X	X	X	X	X	X	X	X	X	ARCHIVAL REQUIREMENT BY FUNCTION	ARCHIVING COMPLETE	5
	X	X										PCU, CS, MFG TRANSITION STRATEGY	TRANSITION RELEVANT ACTIVITIES AND RESOURCES	5
X												PCU PPD PLAN	POST SHIPMENT ENGINEERING SUPPORT STRATEGY	5

Figure 14: Manufacturing Cross-Functional Impact Matrix - Quality

DEPENDENCIES												INPUT	OUTPUT	PHASE
BU	MBU/ PMM	CS	MAT	ME/DOC CON	QUAL	FIN	PLAN	MIS	PERS	FAC	PROD			
	X											PRELIMINARY MFG. STRATEGY STATEMENTS	DETAILED QUALITY STRATEGY – YIELD REQUIREMENTS – PROCESS CONTROL PLAN – INTEGRITY OF ARCHIVAL STORAGE – CUSTOMER SATISFACTION METRICS – DATA RETENTION NEEDS	4B

Figure 15: Manufacturing Cross-Functional Impact Matrix - Finance

DEPENDENCIES												INPUT	OUTPUT	PHASE
BU	MBU/ PMM	CS	MAT	ME/DOC CON	QUAL	FIN	PLAN	MIS	PERS	FAC	PROD			
													COMMUNICATE DATABASE ARCHIVING NEEDS TO MIS – DETERMINE DATA RETEN– TION FOR LEGAL PURPOSES	4B
	X											PRELIMINARY MFG. DELIVERABLES	COST ANALYSIS – ASSET VALUATION – STANDARD COST SETTING – INVENTORY INVESTMENT – CARRYING COST – DUTY DRAWBACK ANALYSIS	4B AND 5
	X											FUNCTIONAL DELIVERABLES FROM MFG. PPD	PPD AUDIT PROCESS – ENSURE INTEGRATED PLANS – COMPLETED CHECKLISTS – ENSURE CORP PPD POLICIES ARE ADHERED TO	4B AND 5

Figure 16: Manufacturing Cross-Functional Impact Matrix - Personnel

DEPENDENCIES												INPUT	OUTPUT	PHASE
BU	MBU/ PMM	CS	MAT	ME/DOC CON	QUAL	FIN	PLAN	MIS	PERS	FAC	PROD			
	X											PRELIMINARY MFG. PPD STRATEGY STATEMENTS	HUMAN RESOURCE PLAN BY FUNCTION INCLUDING CONTINGENCIES – TRANSITION – PLANT CLOSURES – CAREER DEVELOPMENT – RETRAINING – REDEPLOYMENT – SKILLS RETENTION – QUALITY OF WORKLIFE – REWARD AND RECOGNITION	4B

Figure 17: Manufacturing Cross-Functional Impact Matrix - MIS

DEPENDENCIES												INPUT	OUTPUT	PHASE
BU	MBU/ PMM	CS	MAT	ME/DOC CON	QUAL	FIN	PLAN	MIS	PERS	FAC	PROD			
			X	X	X	X		X		X		DATABASE ARCHIVING REQUIREMENTS	ARCHIVED DATABASES FOLLOWING CORPORATE STANDARDS	5

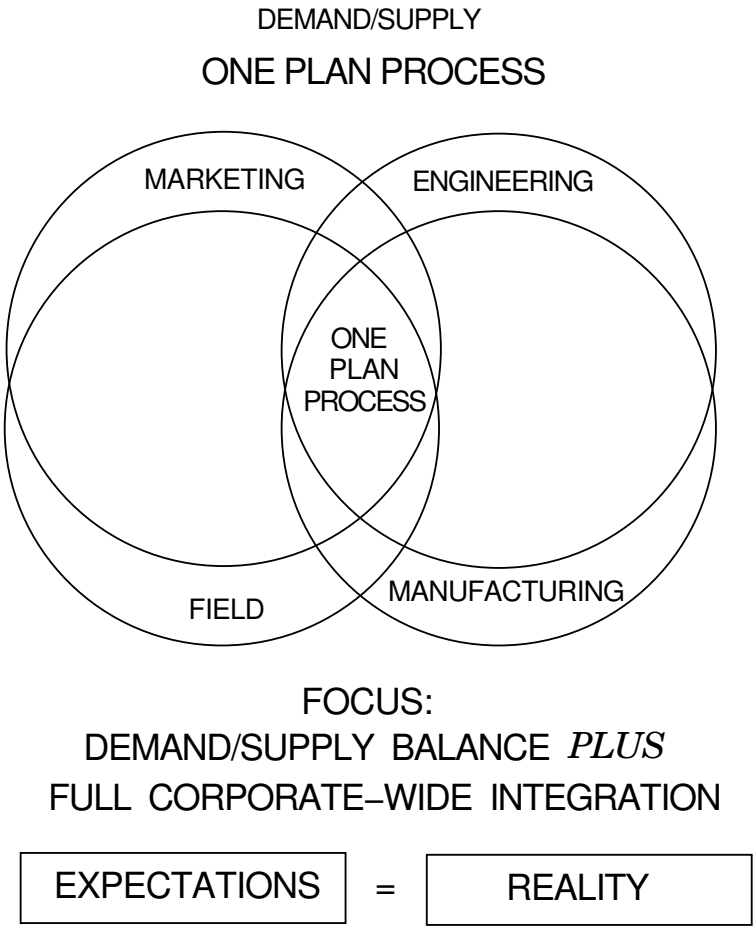
Figure 18: Manufacturing Cross-Functional Impact Matrix - Planning

DEPENDENCIES												INPUT	OUTPUT	PHASE
BU	MBU/ PMM	CS	MAT	ME/DOC CON	QUAL	FIN	PLAN	MIS	PERS	FAC	PROD			
X												NEW PRODUCT INTRODUCTION PLANS	PRODUCT IMPACT AWARENESS TO GROUP MANUFACTURING	3–5
X												PBU PHASE IN AND PHASE OUT PLANS	COMMUNICATE AND INTEGRATE ACROSS ORGANIZATIONS	3–5

APPENDIX A DEMAND/SUPPLY PROCESS FOR PPD

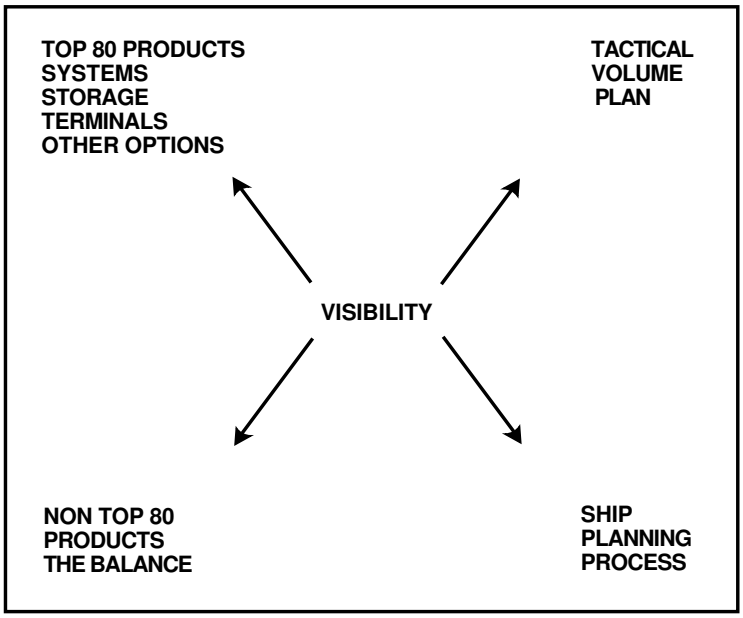
Figure 19 depicts the integration of the Demand/Supply Process for PPD products.

Figure 19: One Plan Process



Product information can be seen at any point in a product's life cycle by the various points of the One Plan Process, as shown in Figure 20.

Figure 20: Product Visibility

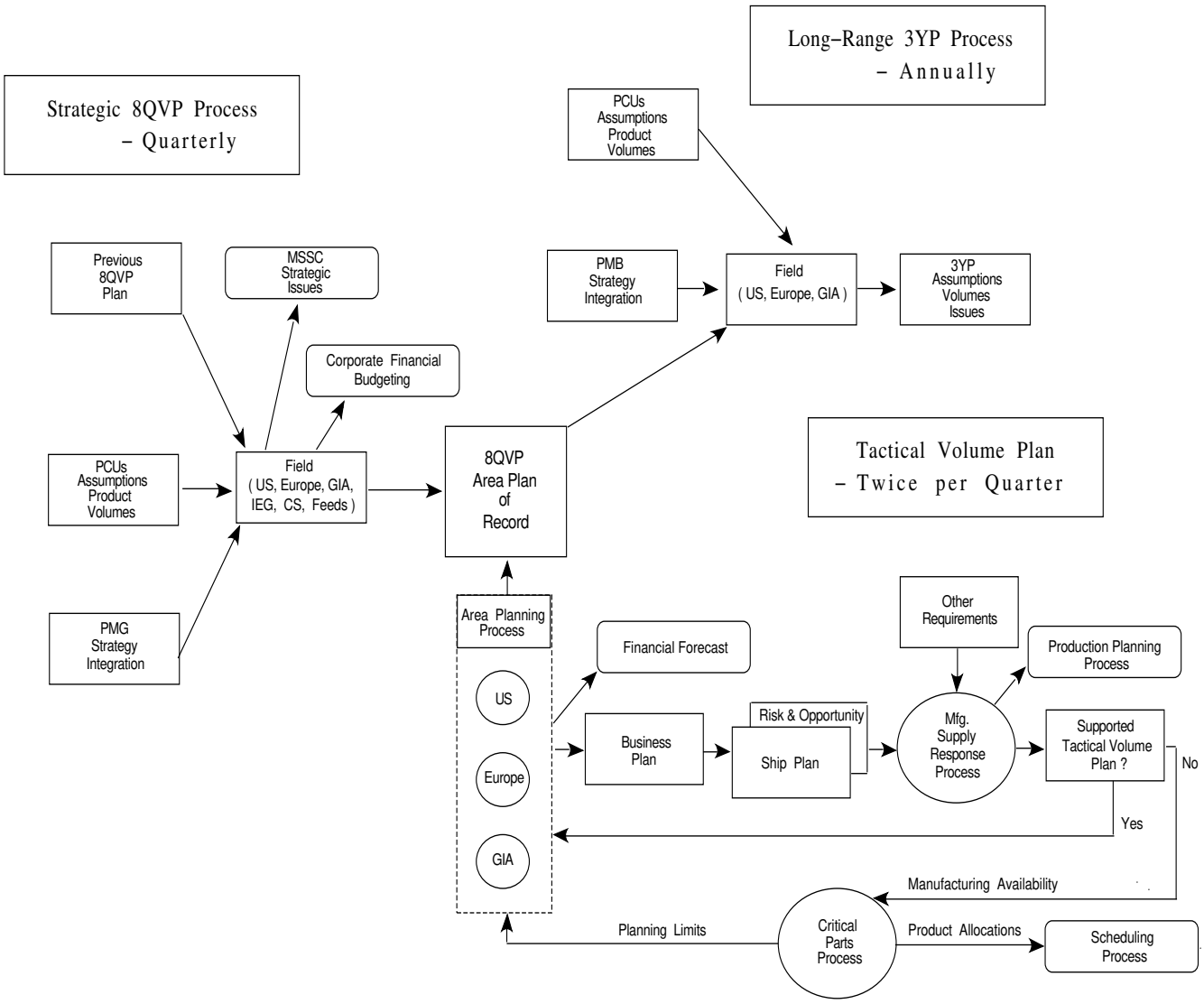


KEY PROCESS POINTS

The following are key process points for information required to manage a product through its phase down.

- Critical parts forum
- Product Shipping Guide
- Collaborative forums
- PCU Assumptions Book
- Tactical Volume Plan
- 3YP

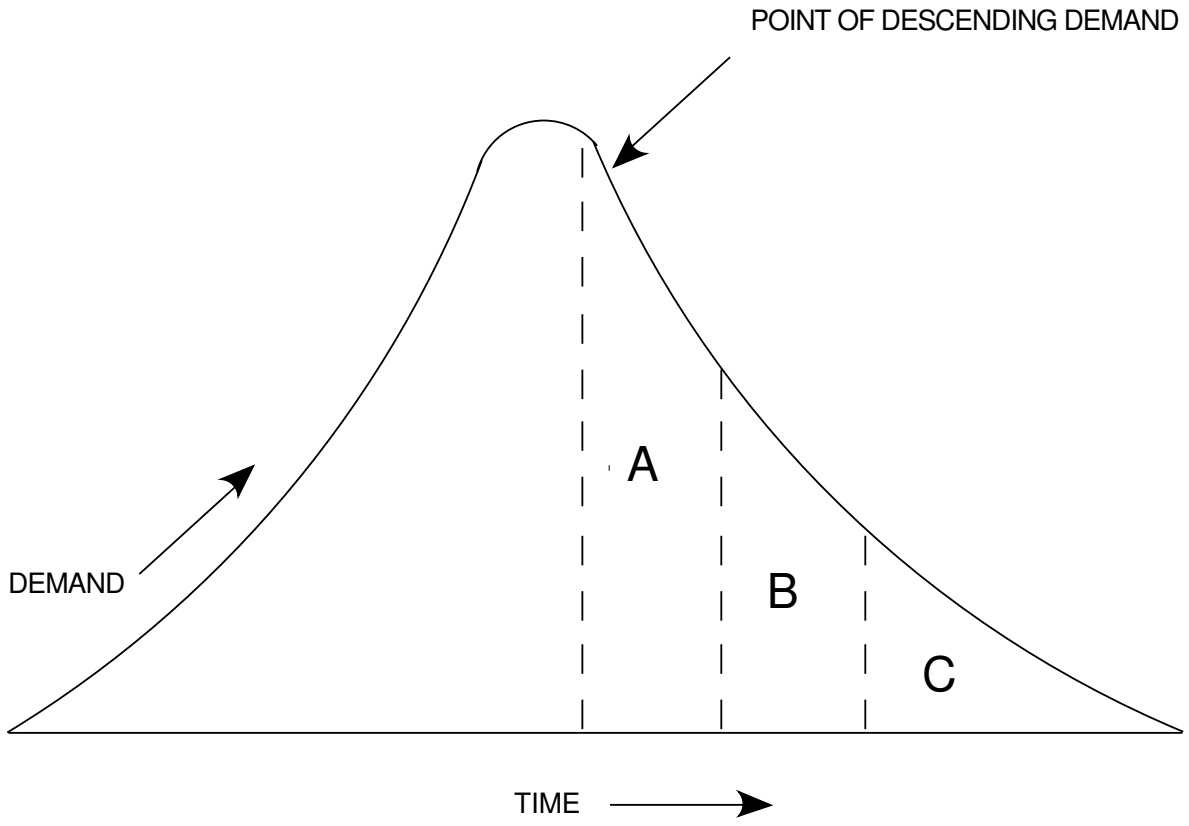
Figure 21: *One Plan* Planning Process



APPENDIX B MANUFACTURING LIFE CYCLE CURVE

Figure 22 depicts the three stages of the PPD curve, stages A, B, and C. (Refer to subhead 2.5.)

Figure 22: Manufacturing Life Cycle Curve



APPENDIX C REFERENCED DOCUMENTS

The following are Digital policies and procedures and other applicable documents that support Manufacturing PPD Management. It is the responsibility of the Functional Managers who are responsible for the implementation of the Manufacturing PPD Management Process to ensure that current revisions of these referenced documents are being used in their areas of responsibility.

C.1 EL-Class Digital Documents

EL-Class Number	Document Title
EL-00028-00	*DEC STD 028-0 Phase Review Policy*
EL-00130-00	*DEC STD 130-0 Product Business Plan Requirements: Content Requirements and Format Guidelines*
EL-00188-00	*DEC STD 188-0 Archiving Engineering Information: Policy and Procedures*
EL-EN540-00	*Product Phase Down Handbook for Product Managers*
EL-FS540-00	*Field Service Product Phase Down Procedures*

Use VTX SMC to order copies of EL-class documents from Standards and Methods Control. Send distribution questions to JOKUR::SMC or call DTN: 234-4423.

C.2 Other Digital Documents

Document Number	Document Title
MEM POLICY 6-125	*Manufacturing/Engineering Financial Control Policy and Procedures - Disposition of Excess, Obsolete and Scrap Inventory*
MEM POLICY 7-100	*Manufacturing/Engineering Financial Control Policy and Procedures - Disposition of Idle, Surplus, Obsolete and Scrap Capital Equipment*

C.3 Ordering Information

Copies of MEM Policies can be ordered through Senior Financial Managers at your location.

APPENDIX D RELATED DOCUMENTS

The following are Digital policies and procedures and other applicable documents that support Manufacturing PPD Management, in addition to the documents referenced in the text of this guide. It is the responsibility of the Functional Managers who are responsible for the implementation of the Manufacturing PPD Management Process to ensure that current revisions of these related documents are being used in their areas of responsibility.

D.1 EL-Class Digital Documents

EL-Class Number	Document Title
EL-00028-01	*DEC STD 028-1 Corporate Product Phase Down Policy*
EL-00060-00	*DEC STD 060-0 Design of Hardware Products to National and International Regulations and Standards, Policies and Procedures*
EL-00071-07	*DEC STD 071-7 Field Change Order Conventions and Processing - Customer Services Finance*
EL-00073-00	*DEC STD 073-0 Manufacturing and Packaging for Publications*
EL-00102-00	*DEC STD 102-0 Environmental Standard for Computers and Peripherals - General Test Requirements*
EL-00115-00	*DEC STD 115-0 Manufacturing Plant Documentation (MPD) Identification and Control*
EL-CP356-00	*Corporate Phase Review Process Guide*
EL-CPPAC-00	*Corporate Policies for Product Pricing, Announcement, and First Customer Ship*
EL-SP540-00	*Administrative Guide to Software Product Retirement*
EL-SS205-00	*New Product Introduction Process Recommendation and Reference Document*

Use VTX SMC to order copies of EL-class documents from Standards and Methods Control. Send distribution questions to JOKUR::SMC or call DTN: 234-4423.

D.2 Other Digital Documents

Document Number	Document Title
EZ-J5357-85	*Purchasing Contracts Manual/Buyouts*

D.3 Ordering Information

Copies of EZ-J5357-85 can be ordered from Publishing and Circulation Services.

GLOSSARY

Area Operations: The business organization within a geographic area responsible for representing business issues from corporate headquarters to the customer through the Sales organization.

can-build: Inventory analysis with goal of determining potential build from existing inventory.

CERTS: Certified orders. Orders that have been taken by Sales from customers that have been approved.

critical parts process: The process by which the allocation of material in short supply is made to the Areas and Customer Services. This drives the parameters around which the areas can schedule orders and, therefore, make customer commitments within time frames that can be achieved. Also, it ensures that plans are constructed within known product constraints, so revenue is not planned or expected for products not available.

Cross Functional Management Committee: Product focused managers in the Product Operations Group that work field cross-functional issues to ensure understanding of the current plans and resolution of product issues. They represent the field perspective throughout the product's entire life cycle. This group manages the monthly Product Captain Forum to review strategic and operational issues, risks, and concerns.

Demand/Supply Business Analysis Manager: Demand/Supply Manager that ensures a process exists and is used for balancing the demand and supply for certain product sets within Digital. This person works with Manufacturing, Engineering, Areas, Customer Services, Marketing, and other functions to ensure that there is a balanced plan within the product set. The Business Analysis Manager also works any issues that need to be resolved and raises risks and concerns to the appropriate level of management. All changes required to the demand/supply process are focused through the Business Analysis Manager.

FMAP: A database updated monthly containing current and historical forecasts, shipments, and ship plan information. Over a period of one year, it covers a maximum of 24 months and a minimum of 12 months planning data.

end product: Saleable product.

end product producer: The entity in Manufacturing responsible for managing an end product. This can be a plant or group.

European Base Product Management: Based in Geneva, this group is the European counterpart to the Product Manager. They are the European focal point for all introductory, promotional, and phase down activity around products.

final build: Same as *product phase down build*.

final ship plan: Ship plan covering all final shipment requirements for the remainder of the product's sales/manufacturing life.

GMM: Group Materials Manager.

Greater PCU (Product Creation Unit): Term used in this document to define a cross-functional group of people responsible for managing a product through its life cycle. This group is chaired by the Product Manager and includes at a minimum:

- Product Marketing
- Finance Management
- Customer Services Product Management
- Area Operations:
  - U.S.
  - GIA
  - Europe
- European Base Product Management
- Demand/Supply Business Analysis Management
- End Product Manufacturing Management
- Pipeline Manufacturing Representation (if needed); that is, GIA Manufacturing, and/or Semiconductor Operations (SCO).

inventory pipeline: Refers to usable Field, Customer Services inventory, and inventory in various stages of the manufacturing process. Includes inventory at all stages of manufacturing, worldwide material, raw materials, work-in-process, and finished goods.

life cycle management: An active approach to managing product performance, plans, metrics, inventory, cross-functional impact, and cross product impact throughout the product's life.

MSPM: Manufacturing System Program Manager.

Material Order System (MOS): The corporate method of transmitting customer demand and supplier response for all parts between Digital locations. MOS is the file structure that allows this transfer of information to take place between Digital locations.

matched sets: A kit or collection of parts/material required to make *X* units or end products.

NOR: Net operating revenue.

One Plan: A process that balances the Top 80 Tactical Volume Plan, the FMAP ship plan, Manufacturing build plans, and demand signals generated as a result of the preceding three.

PBT: Profit before tax.

PCU (Product Creation Unit): Product-focused organizations with Engineering, Base Product Marketing, Product Management responsibilities, formerly known as *Product Business Unit (PBU).*

phase review process: An operational guideline for managing products and systems through their life cycles, defining the life cycles over six phases (0 through 5), and providing a set of milestones for completion of each phase. Refer to *DEC STD 028-0 Phase Review Policy* for more information.

product phase down (PPD): The management process by which a product is retired.

product phase down build: Manufacturing's final volume build determined by the Greater PCU.

ship planning process: The process by which the Field develops the product mix detail of what the Areas plan to ship to achieve their business plans. The ship plan is developed by configuring the business plan into detailed product mix representing approximately 1500 products at part number level. It is developed in monthly buckets and updated monthly with any changes the Field is making to the plan.

SPS: Software Product Services.

Tactical Volume Plan: The plan that lists the demand signal from the Field for the Top 80 products and the manufacturing capacity to satisfy that request. This is the only plan that Digital uses in the operational time frame. Detailed inventory I/Os, current ship plan, and analytical commentary by major product category are provided.

Top 80: Products whose plans are published on a monthly basis in the Tactical Volume Plan. Products are selected based on revenue, shipment, or perceived impact on the Corporation.

trigger point: The point in time when criteria indicates that a PPD process must begin.

Three-Year Plan (3YP): A planning data base, with inputs from Product Management, Marketing, and Areas, that shows forecasted demand for 36 months beyond the FMAP data base.

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